THE JOURNAL

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ANTHROPOLOGICAL INSTITUTE

OF

GREAT BRITAIN AND IRELAND.

APRIL 26TH, 1887.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The election of G. B. HOWES, Esq., F.L.S., F.Z.S., Assistant Professor of Biology at the Normal School of Science, South Kensington, was announced.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

From the Rev. G. BROWN.—A Comparison of the Dialects of East and West Polynesian, Malay, Malagasy, and Australian. By the Rev. George Pratt.

From the UNITED STATES GEOLOGICAL SURVEY.—Geological History of Lake Lahontan. By Israel Cook Russell.

From the YORKSHIRE PHILOSOPHICAL SOCIETY.—Annual Report for 1886.

From the SCOTTISH GEOGRAPHICAL SOCIETY.—The Scottish Geographical Magazine. Vol. iii, Nos. 1–4.

From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE.—Correspondenz-Blatt. 1887. Nos. 2, 3.

From the BERLIN GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE.—Zeitschrift für Ethnologie. 1886. Heft 2.
From the AUTHOR.—A Few Additional Notes Concerning Indian Games. By Andrew McFarland Davis.
—— L'Anthropologie et la Science Politique. By M. G. de Laponge.
—— La Race Humaine de Neanderthal ou de Canstadt en Belgique. By Julien Fraipont and Maximin Lohest.
—— Studi sul Darwinismo. By Francesco de Sarlo.
—— I Sogni. Saegio psicologico. By F. de Sarlo.
—— Das Grabfeld von Elisried und die Beziehungen der Ethnologie zu den Resultaten der Anthropologie. By J. Kollmann.
—— Un Caballito Peruviano. By Dr. Paolo Riccardi.
—— Circonferenza Toracica e Statura studiate a seconda de l'età e del sesso in una serie di Bolognesi. By Dr. Paolo Riccardi.
—— Intorno a la Oscillazioni giornaliere de la Statura ne l'uomo sano. By Dr. Paolo Riccardi.
—— Studio sopra una serie di crani di Fuegini. By P. Mantegazza and E. Regalia.
—— Antropologia dell'Italia nell'evo antico e nel moderno. By Giustiniano Nicolucci.
From the BATAVIAASCH GENOOTSCHAP VAN KUNSTEN EN WETENSCHAPPEN.—Notulen. Deel xxiv. Afl. 4.
—— Catalogus der Archeologische Verzameling.
From the KONINKLIJKE AKADEMIE VAN WETENSCHAPPEN, AMSTERDAM.—Jaarbock. 1885.
—— Verslagen en Mededeelingen. Afdeeling Natuurkunde. Derde Reeks.—Deel ii.
From the AKADEMIJA UMIEJĘTNOŚCI W KRAKOWIE.—Zbiór wiadomości do Antropologii Krajowéj. Tom. x.
—— Rozprawy i Sprawozdania z Posiedzeń. Tom. xiii, xiv.
—— Pamiętnik. Tom. xii.
From the MAGYAR TUDOMÁNYOS AKADÉMIA.—Almanach 1886.
—— Nyelvtudományi értekezések, xii, 6–12; xiii, 1, 2, 5.
—— Nyelvtudományi Közlemények, xix, 2, 3.
—— Nyelvemléktár, xiii.
—— Történettudományi Értekezések, xii, 3, 5–10; xiii, 1, 3.
—— Társadalmi Értekezések, vii, 10; viii, 1, 6.
—— Dankó József. A franczia könyvdísz.
—— Fejérpataky László. A királyi cancellária az Árpádok korában.
—— Dr. Wlassies Gyula. A bünkiserlet és bevégzett büneselekmény.
—— Ungarische Revue. 1885, 8–10; 1886, 1–10.
—— Bulletin. iv, v.
—— Naturwissenschaftliche Berichte. iii.
From the IMPERIAL UNIVERSITY, JAPAN.—Journal of the College of Science. Vol. i, parts 1, 2.
—— Memoirs of the Literature College. No. 1.
From the ASSOCIATION.—Proceedings of the Geologists' Association. Vol. x. No. 1.

From the ASSOCIATION.—Journal of the East India Association. Vol. xix. No. 4.
—— Journal of the Royal Historical and Archæological Association of Ireland. Fourth series. Nos. 68, 69.
From the INSTITUTE.—Proceedings of the Canadian Institute. No. 147.
From the SOCIETY.—Journal of the Society of Arts. Nos. 1792–1796.
—— Proceedings of the Royal Society. No. 252.
—— Proceedings of the Royal Geographical Society. 1887. No. 4.
—— Proceedings of the Society of Antiquaries of Scotland. 1885–86.
—— Bulletins de la Société d'Anthropologie de Paris. 1886. Fas. 4.
—— Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg. T. xxxi, No. 4.
—— Bulletin de la Société Impériale des Naturalistes de Moscou. 1886, No. 4; 1887, Nos. 1, 2.
—— Bulletin de la Société Neuchateloise de Géographie. Tom. ii. Fas. 3.
—— Boletim da Sociedade de Geographia de Lisboa. Nos. 7, 8.
From the LIBRARIAN.—Report of the Mitchell Library, Glasgow, 1886.
From the EDITOR.—Nature. Nos. 908–912.
—— Journal of Mental Science. Vol. xxxiii. No. 141.
—— American Antiquarian. Vol. ix. No. 2.
—— Science. Nos. 215–218.
—— Photographic Times. Nos. 286–291.
—— Kosmos. Vol. i. No. 2.
—— Revue d'Ethnographie. Tom. v. No. 6.
—— L'Homme. 1886, No. 24; 1887, Nos. 1–4.
—— Bullettino di Paletnologia Italiana. Tom. iii. Nos. 1, 2.

EXHIBITION *of* NATIVES *of* QUEENSLAND.

By Mr. R. A. CUNNINGHAM.

Mr. CUNNINGHAM exhibited three natives of Northern Queensland, namely a man named "Billy," a woman "Jenny," and a boy known as "Little Toby." About five years ago he brought them, with much difficulty, from Australia, accompanied by several other natives, since dead. They had been scientifically examined by the Anthropological Societies of Berlin, Paris, Brussels, and Russia; and had travelled for public exhibition through the chief cities of Australia, the United States, Canada,

and parts of Europe, including Moscow and Constantinople. Mr. Cunningham in giving a brief description of their manners and customs, called attention to the cicatrices on their bodies, which were regarded as ornamental, and resulted from wounds made by means of sharp stones or fragments of glass from broken bottles. In illustration of the method of throwing the boomerang, the natives experimented with paper models and displayed great skill in throwing these mimic weapons so as to ensure a return flight across the room. They gave illustrations of a corroborie, sang several native songs, and attempted to count a number of objects laid before them. Excellent portraits of the two adults are in the collection of photographs presented to the Institute by Prince Roland Bonaparte.

Discussion.

The Rev. W. Wyatt Gill said that he had more than once visited the places (Cardwell and Palm Island in Northern Queensland) from which these aboriginal Australians came. He described them as being fairly typical specimens of the race, except that they were of a much lighter colour—owing to enforced frequent ablutions—than can be met with in their own country. Despite the arguments of learned men, the speaker held to the conviction, based on personal observation, that the aborigines of Australia, and of south-western New Guinea are substantially one race. It is an ascertained fact that the coast tribes of New Guinea are immigrant; and are now much intermixed through marriage with the true aborigines of that interesting island. The similarity of their customs is most striking to one who (like himself) had seen a great deal of both Australian and South-western New Guinea natives. They, too, were nomads,—not the coast tribes, but the inland aboriginal natives of south-western New Guinea. This view is fully endorsed by the speaker's friend, the Rev. James Chalmers.

Mr. Wyatt Gill proceeded to say that in a few months he hoped again to be in Sydney, and that there were several scientific men there who took a deep interest in the proceedings of the Anthropological Institute. They hoped ere very long that a somewhat similar society of their own would be formed. Their nearness to the islands of the Pacific and New Guinea, besides the presence of an aboriginal race, are highly favourable circumstances. As many of these aboriginal races are fast dying out, no time is to be lost in gathering up all that can possibly be known of their characteristics, habits, thoughts, worship, and language.

The following paper was then read by the author:—

STONE SPINNING TOPS *from* TORRES STRAITS, NEW GUINEA.

By C. H. READ, F.S.A.

[WITH PLATE IV.]

THE subject of my paper this evening may perhaps be thought a somewhat trivial one to bring before a learned society, but I hope that it may be found not without some bearing on more obviously important matters. I have, however, merely put together a few notes upon these spinning tops, leaving it to others to draw what inference they might from the facts brought forward.

Among a number of objects from New Guinea recently added to the ethnographical collections at the British Museum are the two stone tops of which I exhibit this evening full-sized drawings. They are the first of their kind that I have seen from this part of the world, and it, therefore, seemed to me to be worth while to bring them before the notice of the Institute.

The tops are made of a buff grey sandstone, ground into a lenticular form, $5\frac{7}{8}$ and $4\frac{1}{8}$ inches in diameter respectively, the upper faces being, however, much less convex than the lower, and the outlines of both are fairly circular. In the central hole of each is fixed a stick of palm wood, the larger, $11\frac{1}{2}$ inches, and the smaller $8\frac{5}{8}$ inches, in length, about half-an-inch of which projects on the under side, and the lower part of each stick is painted of a dull red colour. The most remarkable part of these objects is, however, the design which each of them bears on the upper face. Upon the larger of the two is painted in red ochre a standing figure, in profile to the left, of a native with his two arms held up in front of him, and holding some object from which proceeds a curved line, in appearance like a jet of water. The figure is remarkably well drawn, and evidently represents a native in his holiday dress. His head is decorated with three plumes, probably of feathers of the cassowary or of the bird of paradise, and he has two others at the back of his waistband, and behind him are two circular patches of red. Round the edge of the top is a line of red.

The smaller top is painted, or rather stained, with a figure in black, with faint touches of red and yellow. The design is a standing figure, full face, of a character less readily understood than the other. The figure wears apparently trousers, reaching below the knee, has the left hand resting upon the hip, and the right raised and holding an object, which may be a club, though it is not unlike a bottle. The head has apparently been painted in red, and is now but faintly indicated,

having been very much rubbed before it reached my hands. A suspicion has been borne in upon my mind that this painting may be intended to represent a white man with the bottle, which is but too often his companion when living among savages. In the carvings of the West African negroes, the typical white man is constantly figured with a brandy bottle in one hand and a large glass in the other, while in the Nicobar Islands the figure of the British sailor occurs very frequently in the clever sculptures executed by the natives. Among all savages, indeed, who have any pictorial skill, and few have not, the clothed white man is a subject which the artist cannot resist. It may, therefore, well be that the figure on this top is intended to be an European in the attitude which seemed to the painter most characteristic.

These specimens were obtained by the Rev. S. McFarlane, on Murray Island, in Torres Straits, lat. 9° 55′ S., long. 144° 2′ E. Mr. McFarlane has been for many years a missionary in New Guinea, and has visited and lived among most of the tribes of the islands of Torres Straits, of the mainland near the Baxter and Fly Rivers, as well as those of the South-eastern peninsula towards China Straits. He is, therefore, eminently qualified to speak of the habits of the savages of this part of the world. He tells me that these tops are undoubtedly made and used by the natives of Murray Island, although tops are not common toys among the Papuans.

As far as I can gather from Mr. McFarlane, these tops are used simply as toys, much as in our own country, and I did not understand that they were either the means of gambling, nor were they employed in any other special manner. With regard to their use I can, therefore, find little to say.

The making of them, however, must have been a tedious operation, upon which a considerable amount of time was expended. The process is no doubt the same as that employed in making the circular stone discs used by the Motu, and some other tribes, for the heads of their clubs. This, according to Mr. Stone ("A Few Months in New Guinea," p. 57), is to hammer the stone incessantly with another and harder stone, until it is brought to the required shape; after which it is ground smooth, with a sharp edge all round, the operation taking several weeks. If the Murray Islanders possess a drill, like the Koitapu of Fairfax Harbour, the piercing of the central hole would be a work of no difficulty—but even without a drill it would be merely a matter of time if a pointed stone or sharp shell were used, and the exact centre had been previously found. The only really difficult part of the work, and the part in which something more than mere patience was needed, is the grinding

of the convex underside. It is obvious that if the disc were thicker, and therefore heavier, at one side than another, the top when spun, would describe but very few revolutions, and would speedily come to a standstill. The curves of these two specimens are, however, very true, one of them being slightly better than the other, so that when it is energetically spun, it revolves quite evenly in one spot, a process known to school boys as "going to sleep."

I have called these objects tops, though, as they seem to be spun with the hands only, teetotum would be a more accurate term.

With regard to the subjects painted upon them, Mr. McFarlane could not speak with certainty, but suggested that the figure on the larger top represented a native in his dancing dress.

The dances of the Torres Straits islanders are practised at night, and have for their object success in hunting and fishing. It is on these occasions that the extraordinary masks of tortoiseshell are used, and I assume that the form of the masks to be worn would have relation to the particular sport to be engaged in, for example, in the dance to ensure success in fishing, the mask would represent a fish, and so on. Instances of similar dances among savages of other parts of the world will readily suggest themselves to many members present. The series of tortoiseshell masks at the British Museum now contains a good number of specimens, the greater part of which have been sent home by Mr. McFarlane. They represent human heads, fishes, a pig's head, and the largest is an alligator, between six and seven feet long. This we obtained from Mr. McFarlane, and he tells me that the youth who made it actually copied it from the real animal placed before him, and thinking a more artistic effect would be obtained by the alligator's mouth being open, he placed a stick between its jaws to prop them apart, and so they remain in the tortoiseshell copy. I think this indicates an amount of artistic feeling unusual among savages, who are wont to be content with the conventional styles of representation handed down from their forefathers, and but seldom refer to the original type for inspiration.

To return, however, to the subject of my paper. The larger top, I think, we may consider shows a Papuan in gala dress, and probably engaged in a propitiatory dance. In the case of the smaller one, Mr. McFarlane could offer no suggestion as to the subject, and was, on the whole, inclined to think with me, that it represented an European, with his trousers rolled up and holding a bottle in his hand, in fact, just as he would often be seen by the natives. If this be so, it would be an indication

that the decoration of the top, and perhaps the top itself, is of no great age, perhaps ten to thirty years.

I do not think it very probable, though it is, of course, possible, that the natives of the Torres Straits islands invented spinning tops for themselves. It is far more likely that they received the idea from a more cultured and ingenious race; for, apart from the rarity of the occurrence of this toy among savage tribes, it is evident that the notion of a spinning top, a very complex toy, would be little likely to spring ready made into the mind of a people of the mental calibre of the Papuan. We must, therefore, look elsewhere than among the races of New Guinea for the origin of the toy, and it is, of course, towards the neighbouring Asiatic Archipelago, to the west and north, that our first glance would be directed. On the south is Australia, the nearest point of which (80 miles distant) is inhabited by tribes far inferior in physique, and of more limited resources than the Torres Straits islanders themselves; to the east is the Pacific, where live races but little more cultivated than the Papuan, and very little, if at all, more inventive.

Among the Asiatic islands, however, I have not been so successful as I anticipated in finding spinning tops greatly used. In one of the drawings, I show a full-sized figure of a spinning top from Timorlaut, one of the Tenimber Islands, whence it was brought by Mr. H. O. Forbes, now in New Guinea. This specimen is neither of the same form nor material as those from New Guinea, but the mere fact of a top on the same principle being used by a tribe so comparatively near is, I think, worthy of note. As showing the close connection between distant parts of the archipelago, I would mention the great likeness between the drums used in these Tenimber Islands, Dutch New Guinea, and the Philippines (Luzon). The habit of chewing the betel nut, also practised by many of the tribes of the Papuan Gulf, even down to the extreme south-east, came of course from the Asiatic islands, and no doubt tobacco smoking was introduced from the same source. These facts form at all events, *prima facie* evidence of the Asiatic origin of top spinning among the Papuans.

In illustration of the Torres Straits tops, I exhibit full sized drawings of four other tops. One from the Straits Settlements, is a humming top, made of a section of bamboo, with an oblong opening in the side; the second is of precisely the same form, and is stated to come from the Stewart Group (Sakayana), lying a little to the east of the Solomon Islands. I must confess, however, to having some doubts about the correctness of this locality, though the specimen came from the Godeffroy Collection, where they have the best means of testing its accuracy.

The third is a Malay top (*gasing*) made on the lathe, and furnished with an iron peg at the base. It differs from the European top in having the string wound round the upper part. The fourth is the top from Timorlaut before mentioned. This is cut by hand, and is oviform in shape. The long peg on the upper part is used to wind the thick twisted cord, which is made of a piece of Manchester print.

I might, with perhaps some advantage, have brought forward objects similar to these from parts of the East more distant from New Guinea, from India, China, and Japan. And, as a matter of fact, the modern Japanese top resembles these in question more nearly than any other that I am acquainted with. But at this time my object is simply to bring these curious toys under the notice of the Institute, and it was, therefore, unnecessary to go very far afield for analogous instances.

NOTE.—All the specimens, of which drawings were exhibited at the meeting, are in the British Museum.

Description of Plate IV.

Fig. 1. Teetotum or top. It consists of a lenticular disc of greyish buff stone; the upper face is flatter than the lower, and ornamented (*see* p. 85.) Length of stick, 8·6 in; diameter of disc, 4·25 in.; thickness, 1·3 in. Brought from Murray Island, Torres Straits, by the Rev. S. McFarlane.—*British Museum* (*Christy Collection*).

Fig. 2. Teetotum or top, of similar construction and material. The design on the upper face is in this case entirely in red ochre, and represents a standing figure of a native, in profile, to the left; behind him are two circular spots of red. His hands are raised in front of the face, and hold some object from which proceeds a curved line. like a jet of water. On the head of the figure are three plumes, curving backwards, and at the back of his waistband are two others. Round the edge of the top is a line of red. Length of stick, 11·5 in.; diameter of disc, 5·9 in.; thickness, 1·6 in. From Murray Island (Rev. S. McFarlane).—*British Museum* (*Christy Collection*).

Fig. 3. Spinning top of white wood, with stout peg at the top; the body oviform. The whole cut with a knife, not made on the lathe. The string formed of a twisted piece of Manchester print. Height 4 in. Brought from Ritabel village, Timorlaut, Tenimber Islands, by Mr. H. O. Forbes. —*British Museum* (*Christy Collection*).

Fig. 4. Teetotum or top. The body is formed of a section of cane 2·2 inches long, and 1·8 in. in diameter, having in the side an oblong opening cut through diagonally. The ends are closed with wooden plugs, and through the centre passes a stick 7·8 in. in length. From the Straits Settlements. Presented by the Commissioners for the Straits Settlements at the Colonial and Indian Exhibition, 1886. —*British Museum.*

Fig. 5. Teetotum or top, of similar construction and material to the last, with the exception that at the side the opening is small and roughly circular. Round the upper part of the stick is wound a slightly twisted cord. Length of stick, 8 in.; length of body, 3 in.; diameter, 2·2 in. Stated to have come from the Stewart Islands (Sakayana), Western Pacific. From the Godeffroy Collection, Hamburg. Presented by A. W. Franks, Esq., F.R.S. —*British Museum* (*Christy Collection*).

Fig. 6. Malay top (*gasing*) made of iron-wood (?), oviform in shape; turned on the lathe and having a small iron point. At the top is a projecting piece, below which the string is wound. Height, 3·6 in. From Selângor, Straits Settlements. Presented by the Commissioners for the Straits Settlements at the Colonial and Indian Exhibition, 1886.—*British Museum.*

The following Notes were presented by Lieut. Elton :—

NOTES *on* NATIVES *of the* SOLOMON ISLANDS.

By Lieutenant F. ELTON, R.N.

Introductory Remarks.

WHILE serving as a Lieutenant in H.M.S. "Diamond," on the Australian station, the idea occurred to me to get a little anthropological information about the natives in those islands of the south-western Pacific which contain cannibal inhabitants, and amongst which the ships of the English fleet in those parts spend most of their time.

It is usual to find in these island groups some solitary white man who spends his life among the natives, living in some respects as they do; drawing the line at cannibal practices, but taking more kindly to native ideas of domestic economy as to the necessary members of a principal man's household. Some-

times these white men have no particular occupation or object in view, but more commonly they act as collectors of "copra" for some Queensland or other Australian firm, who send a schooner round at intervals of a few months to pick up the stuff for sale in Australia.

"Copra" is the name that has been given (I think by some of the natives) to the insides of cocoa-nuts. Vast forests of cocoa-nut trees fringe the coasts of the islands, and the natives, for a consideration, collect the nuts, break off the shell, and, cutting the inside into two or three pieces, pile up great quantities near the beach in the white man's grounds. Payment is made chiefly in tobacco and axes, for these natives understand so little of the value of gold or silver money that I have known a native, who received a sovereign from a trader in payment, shortly afterwards give the sovereign to another trader in exchange for an ordinary penny box of matches.

In the New Hebrides and the Solomon Islands I found one or two of these solitary copra collectors, and I propose this evening to lay before you the information I obtained from the one living among the Solomon natives. He was a German who had re-named himself "Howard," and he seemed an observant, thoughtful, and well-educated man. While very reticent as to his reasons for having left the Fatherland to take up his abode in this out-of-the-way spot, he was readily communicative about the manners and customs of natives around him.

Parenthetically, it may be said of these natives, as it has ere this been remarked about others, that "manners they have none, and their customs are beastly" in the matter of devouring each other.

During one of the periodical visits of H.M.S. "Diamond" to the Solomons, I wrote down a number of questions of an anthropological nature in a note book, and left the book with the German, asking him to fill in the answers to the best of his knowledge at his leisure.

Some months afterwards, the ship again called at this spot, and I received my book from "Mr. Howard" with most of my questions pretty fully answered. These questions and answers are now before the meeting, but as the exceedingly interesting exhibition of living specimens of the Australian aborigines has occupied most of the time at disposal, the matter must unavoidably be allowed to stand over till the printing of the Journal of Proceedings, in which the notes can be read in detail. I must say that the admirable little publication (too seldom used by travellers) named "The Admiralty Manual of Scientific Inquiry," was my guide in making these investigations.

Questions and Answers relating to the Solomon Islands.

Question 1. What is the average height and weight of the people? A note of any extreme cases, large or small, will be interesting.

Answer. The average height is between 5 and 6 feet. The largest man I have seen on Ugi measured 6 feet 8 inches, his weight was 184 lbs. The smallest full grown man was, if I remember rightly, 4 feet 2 inches in height and his weight was over 90 lbs.

Corpulence is not prevalent among the natives of the Solomon Islands. I have only seen one corpulent man at San Christoval, and I should think that his weight exceeded 200 lbs. The average weight is between 120 and 150 lbs.: the natives are, on the whole, well made, and there are not many cripples among them.

Question 2. Is there any prevailing peculiarity in the shape of the head, especially about the upper and lower parts?

Answer. None that I know of. I have found a difference between skulls from Malayta and San Christoval.

Question 3. What is the usual colour of the eyes and skin?

Answer. The eyes vary in colour from a light to a very dark brown, just as the colour of the skin does. On the islands of St. Anna, San Christoval, Ugi, Ulava, Malayta, Guadalcanar, and Florida the colours of the skin varies greatly from a light copper colour to a very dark brown almost approaching black. The beach people on the island of Isabel are the same, while the bush people at the north end of the same island are of a remarkably light colour. They are very timid, building their houses in trees and only coming down to the ground during the day. The natives of the neighbouring islands, in New Georgia, &c., are enemies to them, and kill them in great numbers: they likewise carry them off for the purpose of making them slaves. The natives of the islands west of the Guadalcanar (namely, Savo, Russel Island, New Georgia, Corrystone, Choiseul, Shortland and Treasury group, and Bougainville) are mostly of a black colour, there being very few light coloured natives among them. A skin disease is very prevalent among the whole race; it is a kind of ringworm, the natives call it *Bueva.*

Question 4. The colour of the hair, and whether fine or coarse, straight or curled or woolly?

Answer. The colour of the hair is dark brownish originally, but they powder their hair with lime and red ochre, which changes the colour to a light reddish brown. On the island of San Christoval this custom is not in general use. The hair is

soft and bushy, or curled in some instances, with a few exceptions of soft straight hair of a light brown colour.

Question 5. Is the head round or elongated in either direction? Is the face broad, oval, or of any other strange form?

Answer. There is no peculiarity in the shape of the head. The forehead is mostly low, in some instances high, and I find these the most intelligent, often the most villainous. The nose is flat and stubby in most natives, although I have seen some with a straight nose. There are some very pleasant features both amongst the males and females.

Question 6. Does infanticide occur, and for what special reasons?

Answer. On the island of Ugi and among the beach people of San Christoval it is a common thing to kill the children at their birth by digging a hole in the earth away from their habitations: the mother lets the child drop into the hole and covers it up immediately. They say that it is too much trouble to rear a child: they would rather buy a grown up child from the bush people for native money, who keep their children for the sole object of selling them to the beach people. On the other islands of the Solomon group infanticide does not occur, unless in an extreme case, such as the child being a bastard. On the island of Ugi the women often procure abortion. I have known several cases of three to seven months' pregnancy, where abortion was procured, but could never find out exactly what they used to procure the same. I am aware that there is a certain shrub growing in the islands, the leaves whereof they use for this purpose, by making a drink of them: likewise they wear tight bandages round their waist. There are only a few women who understand this, and they make rather a profitable trade by it. Of all the natives I have had intercourse with, I find the Ugi and San Christoval natives the most lazy and avaricious, likewise the most immoral. All young women, no matter whether a chief's daughter or a slave's, are prostitutes. In the western islands of this group this is not the case, there being prostitutes or *rambus* among them, but they are the slaves caught in warfare, any prostitution among the natives of the place being punished either by death or a heavy fine. On Ugi a native prefers in marriage a woman that is getting old in the trade.

Question 7. What is the practice as to dressing and cradling children? Are there any reasons connected with it tending to alter the shape of the head or feet or other parts?

Answer. There is very little to be said on this subject. The mother carries the child with her wherever she goes. The first

six months the child is not taken out of the house, neither will the mother leave the house, the father doing all the household duties, if the family is not rich enough to keep slaves. They do not alter the shape of any part, except the nose and ears, which they pierce and then put little blocks of wood in them. The mother carries the child on the left hip in a sling thrown across the right shoulder.

Question 8. Are the children easily reared ?

Answer. A native never strikes his own child and concedes to all its wishes. As soon as the children are able to run about they are left to themselves.

Question 9. At what age does puberty take place ?

Answer. That is hard to say to a certainty. Natives do not keep account of their age. I should say 15 years.

Question 10. Are more than one child at a birth frequent ? Are there more boys than girls at birth ; and in the tribes are there more men than women, or the reverse ?

Answer. I have seen twins, but I believe that it happens very seldom. Natives seem astonished when I tell them of white women having twins often. On some islands, especially on Ugi and San Christoval there are more men than women.

Question 11. At about what age do the women stop bearing children ? And for how long do they generally suckle them ?

Answer. I can hardly tell at what age, I should say at about 45 years. I have never seen a large family on San Christoval and Ugi. The most I saw was five children and they were born in the first 10 years of their marriage. The mother suckles the child until it weans itself at the age of about two years.

Question 12. What are the ceremonies and practices connected with marriage ?

Answer. In different islands there are different customs. On Ugi and San Christoval the practice is as follows :—If a man wants a wife, he cooks a dish full of yams and cocoa-nuts and carries it to the house of his bride elect, whence he returns without uttering a word. The next morning he returns to take the dish away. If the food has not been eaten, he is not accepted, and he takes this as an insult ; if, on the other hand the bowl is empty and a couple of fathoms of money left instead of it, he is not accepted either, but the family wishes to keep on friendly terms with the suitor. Finally, if the dish be *entirely empty* he is accepted. The girl has very little to say in regard to her marriage, it being all arranged by her parents and friends. There is no ceremony attached to the marriage. The bridegroom takes the girl either to his house or goes and stays for a time with her parents, partly to show his ability to keep a

wife, and partly to see what sort of housewife she will make. If he is not satisfied with the girl, he is allowed to return her to her parents, who have to pay the young man for keeping the girl. If, on the other hand, he intends to make her his wife, he pays to the girl's parents about 12 to 20 fathoms of Makua money and makes a large feast, at which great quantities of pork, opossum, fish, yams, taros, and cocoa-nuts, are consumed. The parents of the bride have to give a feast in return. If the husband at any time choose to send his wife back to her parents, they would have to return to him the money paid for her.

Question 13. Is more than one wife the usual thing?

Answer. On the islands east of Guadalcanar the natives generally keep only one wife, although polygamy is in use. Only a few chiefs are married to two wives. On the island of Guadalcanar and on all the islands west of it, men marry as many wives as they can keep. I know a chief in Port Fowler, by name of Goray, who is married to 34 wives and has over 70 children by them. They all live in a village by themselves. His eldest son is married to 10 wives and has got over 15 children.

Question 14. Do divorces take place; and are they frequent?

Answer. Sometimes, but not very often. When a man chooses his wife he knows her well and has been living with her before marriage.

Question 15. What is the usual food of the people; and what are their modes of cooking?

Answer. They live chiefly on yams, fish, and cocoa-nuts, and prepare these in different ways, by making a sort of pudding of yams and cocoa-nuts or of a small oily nut not unlike an almond. They possess pigs, dogs, cats, fowls, all of which animals they use as food, but they mostly feed on vegetables. They have taros, both cultivated and wild. They eat the leaves of different trees as salad or make soups of them. Their original cooking utensils consist of deep wooden dishes of different sizes, sometimes neatly carved and inlaid with pearl shell. They cook their food, wrapped up in leaves, between hot stones. If they make soup they put the ingredients into a dish and keep putting hot stones into it, until the water boils. The bush-people do so at the present time, but the beach people buy sauce-pans and other cooking utensils to boil their food in.

Question 16. How many meals do they take in a day? Can they go without food for any length of time? And are they able to work hard, or for any long time?

Answer. In a well regulated household they take two meals,

at 10 a.m. and 6 p.m. Natives can go without food for a long time. If a relative dies, they taboo themselves from eating everything that grows underneath the ground, also from all saltwater fish; then they live on cocoa-nuts alone, with a few bananas occasionally. They are able to work hard for a long time. The natives of the Solomon Islands are highly prized in Fiji and Queensland, to which places they emigrate in large numbers, for their willingness to work.

Question 17. What is the usual style of dress; and what made of? Do they tattoo or otherwise alter their bodies for the sake of ornament or distinction?

Answer. The men all through the Solomon Islands cover their private parts only with a narrow strip of calico, or with leaves when calico is not to be obtained. The women dress differently on different islands. On the islands east of Guadalcanar single girls go entirely naked, but married women wear a little fringe made of the bark of a tree, as a distinction of their marriage. On Guadalcanar, Florida, and the islands west of them they wear petticoats made of banana leaves. In places where white men have not been or very seldom go to, the men will go naked also. They do not tattoo their bodies as a general rule.

Question 18. Are the people long or short lived? State any well-known cases of extreme old age.

Answer. I should say that they are not long lived as a rule. I know of only a few old people among the beach tribes of San Christoval. The natives have no idea what their age is. The oldest man I know, seems to be about 70 years of age.

Question 19. How do they generally treat the sick; and is there any superstition connected with the treatment?

Answer. They use no medicine of any sort, and sick people have to do the best they can for themselves. They believe that the devil or Atvoa made them sick. Some people profess to have intercourse with this spirit, and they are called for in case of sickness. Lime plays a great part in regard to driving the devil out of a sick person. The medicine man will take a pinch of lime and murmur a few words over it, put it after that into a small leaf and fasten it on some part of the patient. He takes as payment for his services either some Makua money or some tobacco. The natives on Ugi know the value of the medicines of the whites, and often come to get some from me. Still they must have the lime also, and generally they ascribe their recovery to the lime and not to our medicines.

Question 20. Are the people troubled with internal worms?

Answer. Children are, but not fully grown persons, so far as I know.

Question 21. How are the dead disposed of?

Answer. In several ways. No matter what person or rank, as soon as any of the natives die, all the people of the village go to the house of the deceased and lament and howl there for two or three days: if a person of distinction, longer. After the second day the corpse, if of a slave, is wrapt in cocoa-nut leaves and taken in a canoe some distance off the beach, and there thrown overboard. If a person of distinction, he is taken into the bush, then laid on a platform and left until all the flesh has rotted off the bones, which are afterwards carefully gathered, put into baskets and hung up in their houses. If a chief dies, they keep the corpse near, or sometimes in the village, and two of his friends wash him every day until the bones are clean. They are then put into a basket, or sometimes placed in a coffin, made so as to resemble a shark, and put into the tamboo house. This is the devil of the natives. They offer to him the first fruits of the season, such as yams, taros, bread-fruit, cocoa-nuts, &c. If they kill a pig or have a feast the devil gets the first of everything that is cooked. They say they go at night and have intercourse with the devil, and all such nonsense.

Question 22. Is there any idea of a future state; and of what sort?

Answer. All they believe is that after death they are spirits, resembling the image, and can do what they like with the living persons.

Question 23. What is the usual kind of dwelling house?

Answer. The houses on the eastern islands of this group are about from 8 to 15 feet high; in the western islands they build them higher, up to about 40 feet. They all use the leaves of the vegetable ivory palm as thatch, and light wood or bamboo for sides. Some natives keep their houses tidy, but on the whole they are squalid and dirty. In every village they have at least one so-called tamboo house or *tohe*, generally the largest building in the settlement. This is only for the men, it being death for a female to enter there. It is used as a public place and belongs to the community. Any stranger coming to the village goes to the tamboo house and remains there until the person he is in quest of meets him there.

Question 24. Have they any monuments? What sort and what for?

Answer. They have no monuments of any sort.

Question 25. What are the domestic animals? Where did these animals first come from; and are they altered by the climate or food they live upon?

Answer. They possess pigs, dogs, cats, and fowls. The natives confess that the pigs were brought here by white men a long time ago. They are of an inferior breed, with very long heads. Dogs, I believe, are natives of the islands. They resemble a fox more than a dog. They do not bark but howl, and live mostly on vegetable food. The natives are very kind to them. Cats and fowls have not been long among the natives. The predominating colour of the animals is a reddish brown.

Question 26. What is the kind of government? Any odd details about their religion, &c., &c., will be most interesting.

Answer. They have no established government. If a man is married and got a little money and a few slaves, he calls himself a chief, but does not exercise any power over his slaves; they do pretty well as they like. They recognise one or two as the head chiefs or *mani pina* in a village, but do not listen to them unless in a fight, or in any of their tamboos. The white trader's tobacco has more power than a chief's word. But should a chief put a taboo on anything, say, against eating yams or cocoa-nuts, they will observe it most strictly. If anybody dies, his relations are tabooed from eating anything that grows underneath the ground, likewise from all saltwater fish for the space of about one year or less, according to the rank of the deceased. They carve images and put them into their tamboo houses or yam plantations, and believe them to have power over all evil spirits.

Question 27. How do they note and divide their time? How do they carry on war; and what are their usual weapons?

Answer. They divide their time into days, months, and years. The days they note by the sun, the months by the moon and the year by the growth of a yam. Their warfare consists in treachery and surprise. They never stand in open fair fight. If they are not able to kill their enemy with one blow, they do not stop to give him another, but take to their heels. Their usual weapons are tomahawks, clubs, spears, and bows and arrows. They possess many guns, but I have heard of very few cases where men died by getting shot. Although the natives are very fair marksmen when cool and collected, yet in a surprise they fire off their guns without taking aim. Some time ago a native had a shot at me not 10 paces off, with intent to kill, but missed.

Concluding Remarks by Lieutenant Elton.

You will observe that in Mr. Howard's answer to my eighth question, he refers to the domestic bringing-up of the child and

not to its progress in physical growth and strength, which was the sense of my question.

In reply to my fifteenth question as to the *usual* food of the people, he has confined himself strictly to naming the usual daily victuals and has not spoken of the human flesh they occasionally feast on; but he verbally informed me that the natives round him at Ugi now and then went over to the neighbouring island of Guadalcanar, and bought human victims for an approaching feast time; these victims being mostly women. These women were then taken away in canoes and regularly fattened in their purchasers' villages till the festive time. Then they were deliberately killed and eaten, just as fattened pigs would be.

When they happened to be fighting with neighbouring villages or tribes, they always feasted on any unlucky enemy they captured or killed; but these capturings and killings were not on a large scale, as these natives are exceedingly cowardly and timid fighters. Hence human flesh by purchase was more to their liking and more common.

MAY 10TH, 1887.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From H.E. the BRAZILIAN MINISTER.—Archivos do Museu Nacional do Rio de Janeiro. Vol. VI. 1885.

From ROBERT CUST, Esq.—The Origin of Primitive Money. By Horatio Hale.

From the AUTHOR.—The Oceanic Languages Shemitic. By Rev. D. Macdonald.

—— Canoes und Canoebau in den Marshall-Inselm. By Dr. O. Finsch.

—— Hausbau, Häuser, und Siedelungen an der Südostküste von Neu-Guinea. By Dr. O. Finsch.

—— L'Indice ilio-pelvico o un indice sessuale del bacino nelle razze umane. By Prof. G. Sergi.

—— Sul terzo condilo occipitale e sulle apofisi paroccipitali. By Prof. G. Sergi.

From the AUTHOR.—Prebasioccipitale o basiotico (Albrecht). By Prof. G. Sergi.
—— Ricerche di Psicologia sperimentale. By Prof. G. Sergi.
—— Interparietali e preinterparietali del cranio umano. By Prof. G. Sergi.
—— Antropologia Fisica della Fuegia. By Prof. G. Sergi.
From the UNITED STATES GEOLOGICAL SURVEY.—Mineral Resources of the United States. Calendar Year 1885.
From the BERLIN GESELLSCHAFT FÜR ANTHROPOLOGIE, ETHNOLOGIE, UND URGESCHICHTE.—Zeitschrift für Ethnologie. 1886, Heft 6; 1887, Heft 1.
From the ESSEX FIELD CLUB.—The Essex Naturalist. No. 4.
From the SCOTTISH GEOGRAPHICAL SOCIETY.—The Scottish Geographical Magazine. Vol. III. No. 5.
From the ARCHÆOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.—The Archæological Journal. No. 173.
From the ASSOCIATION.—Journal of the East India Association. Vol. XIX. No. 3.
From the SOCIETY.—Journal of the Society of Arts. Nos. 1797, 1798.
—— Proceedings of the Royal Geographical Society. 1887, May.
—— Journal of the Asiatic Society of Bengal. Nos. 272, 273.
—— Proceedings of the Asiatic Society of Bengal. 1886, December; 1887, January.
—— Mittheilungen der Anthropologischen Gesellschaft in Wien. Band XVI. Heft. 3, 4.
From the EDITOR.—Nature. Nos. 913, 914.
—— The Photographic Times. Nos. 292, 293.
—— Journal of Hydrotherapeutics. No. 1.
—— L'Homme. 1887. No. 5.

Prof. FLOWER read a letter from Emin Pasha, dated Wadelai, 8th November, 1886.

Prof. VICTOR HORSLEY, F.R.S., delivered a discourse on "Trephining in the Neolithic Period," illustrated by numerous photographic transparencies projected on the screen by the oxyhydrogen lantern.

TREPHINING *in the* NEOLITHIC PERIOD.

By VICTOR HORSLEY, B.S., F.R.S., &c.

(Abstract).

THE object the author had in view was to obtain the criticism of the Anthropological Institute upon certain views which he had formed from a surgical standpoint, of the operative procedure of trephining as practised by the people of the polished stone epoch, and the reasons which led to its performance.

After discussing the evidence which has now accumulated respecting the probable mode of operating, namely, whether it was done by boring, scraping, or sawing, he shewed reason for believing that in the majority of instances it was by means of sawing, and that in some cases this might have been supplemented by scraping. The evidence upon which these opinions were based was supplied by numerous photographs[1] of specimens in the Broca Museum and elsewhere.

The most usual seat of operation was next discussed, and in illustration of this part of the subject photographs were shewn of a skull upon which the author had marked in outlines, the margins of all the trephine openings of which he had been able to obtain specimens.

By means of this composite arrangement it was demonstrated beyond question, that in almost all the known instances of this practice the opening in the skull was made over that portion of the surface of the brain which is known to be more especially the seat of representation of movement. This region of the brain, moreover, is the seat of origin of that special form of convulsions which is known as Jacksonian epilepsy, and which so frequently follows injuries to the skull and brain. The anatomical grounds, therefore, for accepting the view that the operation was performed to relieve urgent symptoms of the kind mentioned would appear to be very strong.

But further facts of interest exist in this connection. This special form of epilepsy most usually commences with a peculiar sensation in one definite part of the body, whence it travels up the limb towards the head, this usually constituting the *aura* or warning of the onset of the fit. This factor is of special importance since it commonly happens that at the moment when the sensation appears to reach the head consciousness is lost. If, moreover, the mischief is occasioned by a depressed fracture there will be considerable tenderness at the injured place, and this becomes exaggerated at the period of convulsions. Putting these facts together with minor details of such cases too numerous to be mentioned here, the following mode in which the practice may have originated among so savage a people seems to be possible.

The tender cicatrix may have first been excised as the source of pain.

This probably would have produced a temporary benefit, sufficient to encourage the patient to undergo, in case of relapse, a further operation for the removal of bone.

[1] Prof. Horsley was very greatly indebted to the kindness of Prof. Duval and Prof. Topinard, who permitted him to take numerous photographs of the unique specimens under their care.

This would in most cases be followed by relief, not merely of the pain but of the fits also.

Consequently the operation would gain a certain reputation for the cure of convulsions generally, and as such might have been frequently practised among savages to whom pain is of slight consequence.

The author then alluded to the various theories which have been promulgated to explain this interesting problem, and shewed reasons for not accepting them.

Discussion.

Sir James Paget, having been called upon by the President to open the discussion, said that he had studied the subject too little to speak on many of the points referred to by Mr. Horsley, but thought that he had shown the great probability that the opening of the skull was, in different instances, practised in all the three methods described by him. The sloping bevelled edges of some of the openings seemed sufficient evidence of the chiselling; the minute holes arranged in forms approaching circles indicated the drilling; the deep-cut narrow lines the sawing; and so far as he knew or had seen in the many dissected skulls in the Museum of the College of Surgeons and in other museums, there was none of them that made it probable that the changes illustrated by Mr. Horsley were results of disease. Openings in the skull, due to the growth of tumours within it, were not very rare, but in these the opening in the outer table was not larger, but often was smaller, than that in the inner, and there was no bevelling from the outer table to the margin of the inner. Necrosis of the skull due to disease might, when healed, nearly imitate some of the changes referred to the trephining; but such necrosis was rarely on only one spot on the skull. The specimens appeared to be excellent examples of recovery from operations which were, probably, far less dangerous to the rough uncivilised people on whom they were practised than they are now to the more cultivated races, even though these may have all the advantages of the skill and knowledge which are employed in modern surgery.

Sir Walter Buller, K.C.M.G., on being appealed to by the President, as to whether any form of epilepsy was common among the Maoris of New Zealand, said that such cases, if they did exist must be very rare indeed, for he could not remember having met with a single instance. He added that he had listened with much interest to Professor Horsley's excellent lecture, and that while looking at the limelight illustrations he was forcibly reminded of a Maori skull which had come under his own notice. The Maori to whom this skull belonged had evidently sustained a severe injury in the head, probably by a blow from a *tewha tewha*, or wooden *patu*, which had completely laid open his skull to the extent of several inches. It was evident that this had happened during life,

and that the subject had survived the injury, because the sides of the long opening had become rounded over in the process of healing, as so well explained and illustrated by Professor Horsley. He knew nothing of the man's history, but it was clear from the condition of the bone, that he had long survived this terrible wound, and it was likely enough that he had afterwards died in the odour of sanctity. At any rate this very interesting skull had been preserved, and was, he believed, now in one of the Colonial museums.

Dr. PRIESTLEY said he felt in some embarrassment in being called upon to speak, as the subject of the paper was entirely new to him.

Mr. Horsley's communication was extremely interesting, and from the point of view suggested by the President, would, of course, have had additional interest if any mention had been made of the practice of trephining infants as well as adults. He had some recollection of having heard or read of the practice of trephining young children in prehistoric times, probably for convulsions and other like ailments, but the operation was then most likely undertaken, not for purely surgical reasons, but in the superstitious belief that the demon which caused the malady would thus be liberated.

It was well known that convulsions in children were relatively more frequent than in adults, and consequently if in former times it were the practice to trephine the skull for fits or other cerebral ailments in grown-up people, it might be inferred that the proceeding would more frequently be carried out in younger people.

As to the influence of the operation on infantile mortality, to which the President had alluded, he feared he could say nothing, as he knew of no records on the subject.

Dr. RYLE remarked that it was interesting to compare with the results of anthropological investigation the writings of the early medical authors. Trephining is several times mentioned in the works of Hippocrates. In some of his writings, about the genuineness of which there is no question, the date of which would therefore be about 400 B.C., he describes cases of head injuries which he had treated by trephining, and it may be noticed that although he had observed the association of convulsive movements on one side of the body with injuries to the opposite side of the head, he does not endeavour to localise by means of these movements the site of the injury, or the spot at which the trephine should be applied.

A still more interesting notice of trephining is found in the writings of Aretæus, the Cappodocian, who probably flourished about the second century of our era. He actually advises the use of the trephine for the treatment of epilepsy.

He does not apparently make the distinction which we now

draw between traumatic and idiopathic epilepsy, but simply recommends trephining for severe cases.

His account of cranial operations is particularly noteworthy in connection with the description of the operations of the neolithic people which Mr. Horsley had given. For cases of simple pain in the head localised scraping of the bone down to the diploe was practised, but when epilepsy existed the trephine was employed. And it was employed in a peculiar manner. The operator was not to go deeper than the diploe, and was then to bring about the separation of the inner layer of the bone by the use of ointments and poultices. If we may allow ourselves to speculate upon the reasons which may have led to this practice, we may suppose that the two dangers which modern surgeons are familiar with in these operations, viz., direct injury of the brain or membranes by the trephine going too deeply, and hæmorrhage from blood vessels lying on the inner surface of the skull, were recognised by these early operators, and may have given rise to the method of operating which Aretæus describes. To remove this portion of the inner table of the skull after trephining by the slow process of necrosis and exfoliation of bone must have occupied a very considerable length of time. It would be interesting to know if there are any signs of this prolonged mode of operating in the skulls of the neolithic age.

Miss Buckland said that having had the advantage of hearing Dr. Broca's description of the trephined skulls in his museum, she wished to point out that Mr. Horsley differed in several particulars from that distinguished anthropologist. Dr. Broca had dismissed the idea that these neolithic trephinings had been resorted to for the relief of traumatic epilepsy, because he found no sign of depressed fracture either in the region of the operation, or in any other part of the skull, whilst almost invariably there were signs of growth, proving that the operation had been performed in early life, the parietal bones rather than the vertex being the favourite part for the operation. As regards the mode of operation, Dr. Broca had demonstrated that precisely similar openings could be made by scraping with a flint implement or piece of glass, and as this is the method still in use in the South Sea Islands, Miss Buckland believed that Dr. Broca's idea that the neolithic trephinings were thus performed was more likely to be correct, than that these oval openings could have been made by drilling or sawing, although both the latter modes are in use among the Kabyles, who possess metal instruments; but the fact that where the saw is employed, a square is marked out as in Peru, would prove the practice to differ from that in use in France in neolithic times, no square lines being observable, so far as she knew, on the French trephined skulls. That these openings were made to facilitate the exit of evil spirits who had caused the epilepsy or infantile convulsions, seems probable from the fact that in all ages such seizures were regarded as the work of evil spirits, whilst the use of cranial amulets as

charms against such diseases, was not confined to neolithic times, but exists even at the present day, as witnessed by an article in the "English Illustrated Magazine," where it is related that a cranial amulet in Perugia is greatly venerated, as having belonged to a holy man who had been famed for the cure of epilepsy, and it is suggested that pieces had been cut from many skulls in the cemetery in that city for similar uses. Among the Kabyles the operation seems to be regarded as a religious rite, and there would appear to be so little danger apprehended from it that a case is recorded in which a man was trephined five times in as many years and yet survived.

Prof. E. Tyrrell Leith remarked that he thought greater attention should have been directed to primitive psychology in seeking an explanation of the custom in question. He referred more especially to the doctrine of spirit possession, which had not, unfortunately, been hitherto treated as adequately as its great importance deserved. He ventured to suggest that considerable light would be thrown on the custom by comparing it with another, which had survived in India down to modern times. When a Sanyasi, or Brahman ascetic, felt himself at the point of death, he caused himself to be seated in an open grave, which was filled in with salt. At a given signal his skull was broken with a cocoanut or stone by a chosen disciple, and earth was then hastily heaped upon him. That rite, he believed, must have originated in the idea that as speedy an exit as possible ought to be provided for his soul, which, according to a dogma of Hindu philosophy, resided in the top of the head. In the stage of human progress known as Shamanism, all disease was attributed to demoniacal possession, and the Shaman, or medicine-man, was accordingly called in to effect a cure by expelling the evil spirit with the aid of incantations. No cases afforded the savage mind more striking proof of demoniacal influence or the efficacy of magical cure than epilepsy. It seemed, therefore, highly probable that the process of trephining had been employed by primitive man in order to expel the demon who possessed the patient, especially in cases of epilepsy. Such an explanation was not necessarily opposed to the theory propounded by Prof. Horsley regarding the empirical discovery of a cure for traumatic epilepsy by removing such portions of bone as pressed upon the brain in fracture of the skull. He submitted, however, that a higher degree of probability existed in favour of his own hypothesis, as it was more in accordance with the mental process observable in savages at the present day. It had been stated in the paper that in two of the specimens examined it was doubtful whether trephining had been performed during life. Even supposing it had not, that fact was quite compatible with his hypothesis, for it was a common belief among the lower races that the soul remained in the body for some time after death. As regarded the suggestion that the operation might have been employed for the purposes of embalming, he would merely remark

that he did not remember to have met with any description of its use in ancient Egypt. He had always understood that, in the case of Egyptian mummies, the brain was extracted by means of hooked instruments through the nostrils.

The PRESIDENT said that although the author of the paper and M. Broca had both ignored the possibility of an instrument like the modern trephine having ever been used to cut circular discs out of the skull, it might be well to bear in mind that such instruments were largely used by the ancient Egyptian stone masons for hollowing their sarcophagi. These were proved by Mr. Flinders Petrie to have been bronze tubes, set with teeth of very hard stones or jewels; the fact that they were bronze being evidenced by the marks they had left, and the hardness of the jewelled teeth by the depth of the successive cuts in the stone cores that were still to be seen in some of their unfinished works. In fact, the Egyptians were masters of the art of trephining. It would be interesting to know whether, as he believed he had somewhere read, trephining was one of their numerous surgical operations, and, if so, whether there was any evidence of the holes having had vertical edges. Of course, a trephine on the same principle, would easily be made by rude people with tubes of other material than bronze, and with flint teeth.

As regards the motives for trephining, he felt some difficulty in accepting the very ingenious hypothesis of the author, partly because it implied more intelligence than savages usually shewed. In their surgery and medicine they were apt to proceed in a very off hand, ruthless, and unintelligent manner, following their fancies and superstition rather than experience. Another difficulty that he felt was, that he had no recollection of travellers speaking of traumatic epilepsy among savages. Sir Walter Buller had told them that he had never heard of it in New Zealand, and he himself had never heard of it in South Africa, though heavy blows, not unfrequently murderous ones, and very often half murderous, were inflicted by their so-called "knob-kerries." Perhaps it was owing to that hardness of constitution, on which Sir James Paget had made such interesting remarks, that savages were more exempt from the risk of traumatic epilepsy than ourselves. It would be very important to know precisely what are the motives that prompt trephining the skull among those rude races where the practice still exists.

Prof. HORSLEY, in reply, desired to thank the Institute for the very kind manner in which it had received and discussed his views.

It was impossible to accept Miss Buckland's rendering of Prof. Broca's view, for square lines and distinct saw cuts are observable on the French trephined skulls.

Prof. Leith's view that possibly it was performed in cases of ascetics or medicine men at the time of death is one well meriting further investigation.

May 24th, 1887.

Francis Galton, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors:—

For the Library.

From George W. Bloxam, Esq., M.A.—Proceedings of the Athenæum Society. No. 4.
From the Author.—Les Peuplades de Madagascar. By M. Max Leclerc.
—— Une Nouvelle Force? Première et deuxième communications. By J. Thore.
From the Society of Antiquaries.—Archæologia. Vol. L. Part I.
From the Kongl. Vitterhets Historie och Antiqvitets Akademien.—Antiqvarisk Tidskrift för Sverige. Del. ix, Nr. 1, 2; Del. x, Nr. 1.
From the Free Library Committee of the Borough of Great Yarmouth.—First Annual Report. 1886-87.
From the Deutsche Gesellschaft für Anthropologie, Ethnologie, and Urgeschichte.—Correspondenz-Blatt. 1887. No. 4.
From the Società Italiana di Antropologia, Etnologia, e Psicologia Comparata.—Archivio per l'Antropologia e la Etnologia. Vol. xvi, Fas. 3.
From the Institution—Journal of the Royal United Service Institution. No. 138.
From the Society.—Journal of the Society of Arts. Nos. 1799, 1800.
—— Proceedings of the Royal Society. No. 253.
—— Journal of the China Branch of the Royal Asiatic Society. Vol. xxi. Nos. 3, 4.
—— Mittheilungen der Anthropologischen Gesellschaft in Wien. Band xvii, Heft 1.
—— Schriften der Physikalisch-ökonomischen Gesellschaft zu Königsberg i. Pr. 1886.
From the Editor.—Nature. Nos. 915, 916.
—— Photographic Times. Nos. 294, 295.
—— L'Homme. 1887. No. 6.
—— Revue d'Anthropologie. 1887. No. 3.
—— Bullettino di Paletnologia Italiana. 1887. No. 3.

The following Paper was read by the Author:—

COMPARISON *between the* RECUPERATIVE BODILY POWER *of* MAN *in a* RUDE *and in a* HIGHLY CIVILISED STATE; ILLUSTRATIVE *of the* PROBABLE RECUPERATIVE CAPACITY *of* MEN *of the* STONE-AGE *in* EUROPE.

By Dr. GEORGE HARLEY, F.R.S., Ex-Professor in University College, London.

THE collating of the data constituting this communication—illustrative of the relative recuperative bodily capacity of men in different positions of life—suggested itself to my mind by Professor Horsley having demonstrated[1] in his discourse, delivered at the last meeting of the Anthropological Institute, that rough, unlearned men of the European stone-age, had successfully performed operations on the skulls of their associates, which if done nowadays in the same way, and by the same means, upon highly civilised men would inevitably kill them.

The success of the neolithic man in removing large portions of the bony covering of so delicately constituted an organ as the human brain by scraping, chiselling, or sawing it away with rude stone implements, appears all the more extraordinary when we reflect that the generally entertained idea is that the modern inhabitant of Europe vastly excels his predecessor of the neolithic period, both in bodily physique and mental power, surpassing him alike in stature and in strength, as well as in longevity. Consequently one would expect, other things being equal, that men of the present period would be able to endure better and recover quicker from bodily injuries, whether accidental or intentional, than their less powerfully built neolithic predecessors. As the result of Professor Horsley's researches, however, apparently prove that the reverse is in reality the case, it becomes an interesting point for us to determine whether or no, in spite of the men of the stone-age in Europe being both smaller and muscularly weaker than the present inhabitants of the same localities, they were not actually possessed, for some reason or another, of a much greater bodily recuperative capacity than their more highly developed civilised successors.

On personally communicating to the President my opinions on the matter, he suggested that it might be advisable for me to embody them in a paper, and communicate it to the Anthropological Institute. I have followed his advice, and am now doing so, in the hope that after my ideas on the subject have

[1] "On the Operation of Trephining during the Neolithic period in Europe; and on the probable method and object of its performance." See *Ante*, p. 100.

been heard, some of the gentlemen present, whose opinions are of weight in all questions of this kind, may, while commenting on the communication, throw out additional fresh ideas which will materially aid us in arriving at least at some plausible, should we fail to find a perfectly satisfactory, solution to the above-named apparently human constitutional enigma.

This communication, however, has not solely that object in view, but also the equally important one of directing attention to the vital degeneracy of the present race of Europeans, as regards their bodily recuperative capacity.

In order to save time, and to make my views perfectly plain, I shall at once present them in the form of a proposition, and then proceed to adduce, as succinctly as I can, the facts that appear to me to form a sufficiently substantial basis to warrant my entertaining them.

My proposition is simply, that I believe, that in spite of men having increased in weight, stature, and strength, as well as their years of life having been augumented by their evolution from a state of barbarism into one of *bien séance* and refinement, their bodily recuperative powers have materially diminished instead of having increased under the otherwise improving influences of civilising agents.

Indeed, as far as I have been able to discover, all the facts one is able to collect appear distinctly to prove that every appliance adding to man's bodily comfort, every food pampering his palate and exciting his appetite, as well as all contrivances either stimulating or developing his mental faculties and powers of perception, while adding, no doubt, to his personal enjoyments, have a direct deteriorating influence on his animal vitality, rendering him less able to resist the lethal effects of bodily injuries, or to recover from them either as quickly or as well as individuals of the same race and temperament not having similar corporeal and mental advantages.

Before proceeding to adduce data in support of this opinion it may be advisible for me to say that I imagine our surprise at the superior recuperative powers of the men inhabiting Europe during the stone-age, in a great measure arises from our somewhat erroneously confounding together, and regarding as synonymous, two entirely distinct and mutually independent physiological factors, namely, muscular strength and bodily recuperative power; the fact being that high muscular development may be associated with but moderate recuperative bodily power, and an extremely high recuperative bodily power with a relatively-speaking moderate physical strength. To take extreme cases by way of illustration, I may refer to what is observed in the crustacean and saurian species; as both of them demonstrate

the fact that comparatively speaking feeble animals, low in the scale of development, possess a remarkably high recuperative bodily power. A crab, for example, can regenerate a lost toe, and a lizard restore an amputated tail.

With these preliminary observations I now proceed to adduce proof that the refining influences of civilisation deteriorate human recuperative bodily power; and in order to show this clearly I shall first call attention to the relative recuperative powers of man living in a wild and in a highly civilised condition. As the cases that have already been published illustrating this point are most probably known to you all, I shall refrain from citing any of them, and limit my illustrations to such as I have been able to collect myself. Moreover, as time is of moment I shall only give two examples of each kind, selecting those that I deem the most conclusive; and in order that they may be all the more telling I shall choose them from two distinctly different races of savage men, who, from living far apart, in different hemispheres of the globe, and under entirely different climatic influences, may be supposed to possess but slight, if any, constitutional similarity. The one race, therefore, will be that of the South African Caffre; the other that of the North American Indian.

First then as regards the recuperative bodily power of the male South African Caffre living in a rude state. The case I select is one furnished to me by Colonel Alexander Moncrieff of an injury which, before the days of antiseptic surgery, was regarded as one of the most formidable and dangerous to life to which any human being could be subjected. It is as follows:—

A Caffre of about thirty years of age was so badly gored in the abdomen by a bullock that his bowels fell out. One of his companions went to his assistance; gathered up the bowels; washed and freed them from the dirt which had become attached to them while they were trailing on the ground; replaced them in the abdomen, and closed up the wound as best he could. And what was the result? Simply that the wound healed by "the first intention," and the injured man was well and again following his usual avocations in a few days.

Now for the case of a North American Indian. While I was passing from the rugged volcanic geyser district of Montana into the fertile plains of the Columbia River in Oregon, in 1884, the conductor of our train pointed out a one legged Indian, standing at the depôt, whom I mistook for a woman, from his being like the squaws, as devoid of hair on his face as they are of projecting bosoms, and not alone being dressed in a similar costume, but wearing his head-hair in the same long and lank fashion as the women do. This man, the conductor said, had

hacked off the lower part of his own leg with a tomahawk, in order to extricate himself from a crane, and afterwards crawled more than a mile to his wigwam before he could get assistance. Yet in spite of all this, he was able to hobble about, minus his leg, within a fortnight.

The two next illustrative examples of recuperative bodily power will be that of savage women, and for this I purposely select them in the form of recoveries from childbirth. Childbirth being an identical physical process in all members of the human species, the comparative effects of it in a savage and in a civilised state admits of easy and definite comparison.

It may, I think, be pretty safely said that it takes an average healthy woman, not being a primipara, in the middle ranks of European life, from four to fourteen days to recover from the immediate effects of a natural accouchement. Here then are two examples of the amount of time rude savage women require to recruit from the same undertaking.

The following case was furnished to me by John Mintern, an intelligent man, who acted as my class servant during the time I filled the Chair of Medical Jurisprudence at University College, London. It fell under his notice while he was travelling in Africa along with the late Sir Andrew Smith, as his personal attendant. Mintern said that one morning while they were sitting at breakfast a young Caffre woman, who formed one of their party, rose up and left them, and soon after they had finished the meal, and were preparing to start on the track, returned to camp with a face beaming with smiles, and a new born baby in her arms. I asked Mintern how long he thought she had been absent, and he replied that, although he could not say positively, still judging from the time they usually took to their meals, he did not think she could have been away altogether more than half-an-hour. Yet during that time she had not only delivered herself but attended to her baby. The next case is one of a North American Indian, kindly furnished to me by Mr. Charles Roberts. I give it in his own words:

"When crossing the Rocky Mountains, in Canada, in 1873, the squaw of our Shuswap Indian guide, who usually marched at the head of our party, dropped behind, and thinking she was unable to keep up with us, as she was heavily laden, with her husband's gun in addition to camping necessaries, a halt was ordered and we began pitching our tent. Before, however, we had time to accomplish this the squaw rejoined us with a newly born infant added to her luggage, and apparently in a perfectly fit state to travel. She had certainly not been absent from the party for more than an hour, during which time she had been confined without any assistance whatever, with not even so

much as the companionship of her lazy husband. On our proceeding on our journey on the following morning the woman took up her usual place as leader of the party, carrying her ordinary load in addition to her newly begotten child, and marched along without showing signs of either weakness or fatigue."

I shall now endeavour to show that this apparent super-recuperative animal power, possessed by savage women, has most probably nothing whatever to do with any innate constitutional peculiarity, but arises solely from the fact that the savage, owing to her mode of life, retains the natural *aboriginal* bodily recuperative capacity of the human species, which highly civilised woman has lost, by reason of her refined mode of living.

This doctrine appears to be demonstrable by the fact that women of the same race, living in the same locality, manifest entirely different degrees of recuperative power after child-bearing, according to their habits and positions in life.

One of the best proofs of this, which it is in my power to cite, came under my own observation while I was spending my autumn holidays at Meopham, in Kent, during 1870.

While taking a walk one day, at the commencement of the hop harvest, I was accosted by a female tramp, of about forty years of age, carrying a newly born infant, rolled up in a rag, of which, she informed me, she had a few minutes before delivered herself, on the other side of the hedge. She asked me to direct her to the nearest workhouse. Seeing that the baby had not a particle of clothing upon it, and that the nearest workhouse was at least seven miles away, I directed her to a farmhouse not more than a quarter of a mile distant, to which she immediately repaired. On the following morning I called at the farm, with the view of assisting the woman, and on my arrival was told by the farmer that she had started early in the morning, to walk to Gravesend, which being little more than six miles off, he assured me, she would easily reach within a couple of hours, adding, that she had promised to return to his hop picking in a day or two, speaking as if he was quite accustomed to that sort of thing, and had not the slightest doubt that the woman would be both able and willing to fulfil her promise.

The maternity feat of this tramp is yet eclipsed by that of a Scotch woman living at Campsie, near Glasgow. It was related to me by Mr. Mortimer Evans, in the following words:

"In 1879, a woman, aged 28, while engaged in washing, outside her cottage door, was seized with labour pains. She went into the house, delivered herself of a living child, and immediately afterwards returned to the tub, and finished her washing."

What gently reared Kentish or Lanarkshire lady would be found capable of accomplishing feats like these? Not one, I think, and yet they are of the same flesh and blood as their less pecuniarly favoured sisters, whose recuperative bodily powers, in my opinion, they have good reason to envy.

In further proof that the refining influences of civilisation diminish animal vitality, notwithstanding that they improve both physique and longevity, I shall give examples of the degeneracy of bodily recuperative power in members of what in ordinary language are denominated lower animals. Not, however, from the lowest, but from the highest groups of the brute creation, and from those, too, with which we are most familiar in a state of domestication; namely, the sheep, the ox, the horse, and the dog.

First, as regards the detrimental effects to maternity of fine breeding upon sheep.

Mr. Alfred Morrison tells me that such is the bodily recuperative degeneracy produced in pedigree sheep by high breeding, that his celebrated flock of Southdowns cannot be left to lamb by themselves. Having not only to be carefully kept in a covered fold during the lambing season, but in many, nay, even in most instances, the ewes have to be artificially assisted by the shepherds while in the act of dropping their lambs.

While as regards pedigree oxen, Mr. Morrison further informs me, that in many cases high bred shorthorns have their animal powers so deteriorated, through the influence of fine rearing, that most of the cows among them fail to yield sufficient milk for the wants of their offspring.

Next with reference to horses. It is well known to veterinary surgeons that a sturdy mountain pony will not only tolerate, but rapidly recover from an operation which would produce a great shock to the system, and might probably even prove fatal if performed on a high class thoroughbred race horse.

Lastly, my own experience with dogs has taught me that the delicately reared Italian greyhound will succumb to an operation which a roughly brought up mongrel cur may feel so little the effects of, that immediately after it, he will partake of food, and then quietly coil himself up and go to sleep in front of the fire, as complacently as if nothing had been done to him.

I might go on multiplying corroborative examples, did I not imagine that those already cited are both numerous enough and conclusive enough to form a substantial basis to the somewhat paradoxical-like sounding proposition I set out with, namely, that in spite of civilising influences being potent agents in improving man's physical as well as mental powers, increasing alike his stature and his strength, as well as extending his

length of days—they are, like the rose, associated with a prickly thorn, inasmuch as *pari passu* with the ameloriation of his mental and physical condition, they materially diminish, instead of augment, his bodily recuperative powers.

Discussion.

The President mentioned some facts published in his own book of travels, showing the extraordinary power of South African natives to endure severe injury. He mentioned the great difference well known to sportsmen, between the powers of various species of animals to survive wounds; thus, a heron would collapse on receiving a few pellets of shot fired from a gun at a long range, but a hawk was killed with difficulty. It would be a matter of interest to learn if there were any connection between recuperative power in respect to wounds, and general longevity. The author's remark that animals of a high "breed" had small recuperative power, seemed to require a little further analysis owing to the double sense in which the word "breed" was commonly used. That in which it was employed by the author seemed chiefly to regard their more delicate nurture. But etymologically it was more properly applied to descent, and here the loss of recuperative power was in a general way intelligible, because any variety of animal that had been long bred from selected specimens with a view to develop some particular quality, might be expected to be rather deficient in others, and, therefore, to have on the whole a weaker constitution than that of the parent stock.

The Author, in reply to the questions put to him by the President, remarked that the different bodily recuperative powers possessed by such birds as the heron and the hawk, were, he thought, readily accounted for by the fact of different species of animals possessing marked differences of constitutional vitality. It was not so easy, however, either to give a reason for the relative differences in the bodily recuperative powers of different members of the same species or of the relative different recuperative bodily capacity of the same individual under different circumstances. Some of the channels by which civilising influences act on the animal constitution are tolerably apparent, while others are exceedingly obscure. To him it appeared that the superior recuperative bodily powers of savages, and of men, not savages, living in any rude state, in comparison to highly civilised men, were not due to any gain in the case of the former, but to an actual loss of the *aboriginal* recuperative power of the human species in the latter. Man, he thought, was naturally born to endure hardships, and it was only on account of the cultivation of an artificial refined state of existence that he was led to regard many natural conditions of existence as hardships at all. For instance, while crossing the Rocky Mountains, in Idaho, in 1884, he and his party came, one morning, upon four "Flathead" Indians sleeping on the hard rough stones by the margin of a

river. It having been a cold frosty night, they had lain down side by side and placed their blankets one on the top of the other over them for better protection from the cold, and nothing but their four black heads projected beyond the covering. To all appearances these men were sleeping as comfortably on the rough stones as we would do in a feather bed. Probably, indeed, if accidentally transferred to a feather bed these Indians would have felt less comfortable. For, by a wise dispensation of Providence, comforts which one has never enjoyed one never feels the disadvantage of being without. What is even more fortunate, is that such is the peculiar constitution of man that he can adapt himself, and get accustomed to almost any form of hardship. Thus, to his personal knowledge, the late Mr. Charles Waterton, the South American traveller, of "the Wanderings" reputation, habituated himself to sleep for 25 years of his life on the hard, bare boards of the floor, with a block of wood for a pillow, and a cocoanut mat for a coverlet. This is surely a more astounding feat than that of the American savages, who never knew anything better, sleeping on hard stone boulders; seeing that it was not until after Mr. Waterton had reached manhood's estate, and after he had been accustomed to all the luxuries of an English country gentleman's life that he voluntarily adopted the above mentioned rude mode of taking his nightly rest.

Hardships, he believes, have the effect of retaining to savages, as well as civilised men living in a rude state, by strengthening the constitution, the *aboriginal* recuperative bodily capacity of the human race; while, on the other hand, warm clothing and comfortable housing, rich feeding and late hours, heated rooms and polluted atmospheres, more especially when associated with little muscular out-door exercise, have the direct effect of enervating the human frame and reducing its bodily recuperative capacity to far below the normal standard.

The agent which most of all lowers human bodily recuperative capacity is, in Dr. George Harley's opinion, alcohol. Medical men have been long cognisant of the fact that men who are in the habit of imbibing alcoholic stimulants, either in the form of wine, beer, or spirits, even though not drunkards, are much less able to withstand the lethal effects of bodily injuries than those who never drink them; while the recuperative powers of those who indulge in stimulants in excess are well-known to be reduced to a minimum. It is a well recognised fact for example, that no patient that enters the surgical wards of a hospital with a severe injury has less chance of recovery than the big, powerfully built, muscularly strong brewer's dray-man. Not only does he recover from wounds badly, but he attracts erysipelas readily, and spreads infection rapidly.

The effects of living in impure air is again well exemplified in the case of the young Resident Medical Officers in hospitals, one and all of whom, more especially if their animal vitality is still further lowered by over study, have their recuperative bodily

capacity sometimes deteriorated to such a degree, that if they get a flesh wound, it is almost certain to become a suppurating sore, and so bad an one too, that notwithstanding the application of all the most powerful therapeutic agents in the pharmacopœia, it will sometimes resist healing so long as he lives under the hospital roof; whereas it heals rapidly, without assistance from either balm or lotion, so soon as he transports himself into the pure, strong, fresh air, either of the seaside or mountain top.

In this we see that a mere change in physical conditions creates a change in bodily recuperative capacity. But the most remarkable fact of all is, that highly civilised man has it in his own power, not only to bring his recuperative bodily capacity up to but even far beyond that of the standard of either the savage, or of the civilised typical man living in a rude state. This he rendered apparent by calling attention to the marvellously high bodily recuperative capacity encountered in cases of civilised athletes after "a course of training;" the salutory regimen of the training process having the effect of bringing them up to the highest state of physical perfection a human being can attain to.

This can be most readily illustrated by referring to the artificial changes brought about in the human constitution, as witnessed in the case of prize fighters. And it will be best exemplified by a brief narrative of what Dr. Collins told him regarding what he observed in the case of the American pugilist, Heenan, who fought with the British "champion of the ring," Tom Sayers. The fight, as some may have heard, was a desperate one, and in the evening after it, on Dr. Collins visiting Heenan, he found him so disfigured about the face as to be scarcely recognisable as a human being. His eyes were totally invisible, his brow, cheeks, and lips swollen, bloated, and black. Not a vestige of a human feature remained. Yet, what happened? So high had the vital recuperative capacity of this man been raised by diet and exercise, that within four days all the swelling had completely subsided. And ere other four days had passed away the whole of the effused blood had been absorbed. Every trace of the ecchymosis had vanished, and the man's features were completely restored. It is impossible for any one, possessed with medical knowledge, for a moment to doubt that these startling results could have been due to anything else than a super-recuperative bodily vitality engendered by the hardening of the general system by training.

Having said this much it will not do to leave the subject without adding a short addendum on the probable causes of the loss of recuperative healing power on child-bearing women living in a highly civilised state.

All know that exercise increases the size of human muscles, and that an increase in the work done by the muscles entails an increase in the size of the bones to which they are attached. It may be equally accepted as a physiological doctrine that a disuse in the muscular apparatus of the human frame entails a diminution

not alone in the muscles themselves, but also in the bones to which they are attached, and which they consequently employ as fulcra during their action. Hence it is readily seen why, not only all the muscles of the body and the bones of the pelvis as well as the bones of the hands and feet in delicately reared women, are smaller then in those accustomed to manual labour. Now in addition to this smalling of the muscles as well as of the bony outlet of the pelvis tending to impede natural labour, there exists yet a further increase to the difficulty of parturition in the refined woman, from the fact that her own augmented education induces a *pari passu* increase of cerebral development (by reason of hereditary transmission) and consequent increase in the circumference of the head of her offspring. So that there is thus a double reason why refined and highly civilised women should have more difficult labours, and less bodily recuperative capacity after them, either than savage women, or their less favoured civilised sisters, living in a rude, uneducated state.

Moreover, the changes in the frame of a highly educated woman and her offspring, brought about by the refining influences of a high civilisation, become more and more marked through generations of hereditary transmission. Just as the rats in the Mammoth Cave, and the fish in the Adelsberg grotto, have become blind, by generations upon generations of their ancestors having never had occasion in their dark underground dwellings to use their organs of vision, so in like manner, the bones, as well as the muscles of men and women, from a partial disuse of them in several generations of their ancestors, became smaller. The diminution in the size of the bones and muscles of the hands and feet, engendered by an absence from hard labour through several generations is, in fact, so apparent that it has given origin to the proverb that—

> "In little hands and feet we trace
> The scions of the higher race."

What holds good for the muscles and bones of the frame holds equally good for the brain and the internal organs of the body. So that just as the features of the face are transmitted from parent to child the mental qualities and internal (invisible) organisation is as well. Hence we find that "constitution" is handed down from sire to scion, be it bad or be it good, just as physiognomy is. One is not surprised then at hearing that the naked Terra del Fuegian woman transmits to her babe her own power of enduring with immunity an exceedingly low temperature. To such a high degree too is this the case that her naked infant, but a month or two old, will lie unconcernedly smiling and crowing at the bottom of its mother's fishing canoe, while cold snow flakes are falling upon, and melting from off, its bare skin. A counterpart to this fact is related at p. 224 of Mr. Seton Karr's "Shores of Alaska," where he gives a sketch of a little child of the Oodiak tribe of Indians, who, clad in nothing but a short cotton shirt, with bare feet, legs,

and head, walked across the Nuchuk mountain pass mid snow and ice with perfect impunity.

These two cases cannot but be regarded as truly typical specimens of transmitted hereditary bodily capacity to endure hardships. For here we have the children of two entirely different races of men—one in the north of North America, the other at the extreme south of South America—enduring with impunity a temperature of the atmosphere so low, that if the children, similarly aged, of a highly civilised European were subjected to it, they would inevitably shiver, freeze, and die in the space of an hour or two.

These cases, Dr. George Harley thought, afforded additional evidence that a high standard of bodily recuperative power is naturally inherent in the human race, while the formerly cited examples of an opposite character, go far to show that the refining influences of civilisation have in reality not proved such an unalloyed boon to mankind as is usually imagined, and that all the present races of men, though they may be of the same flesh and blood, are not endowed with the same degree of bodily sensibility and recuperative vitality, and while they may be further said to account for the well known fact that the present race of delicately nurtured women are the victims of *migraines*, and neuralgias, which were as much unknown, even by name, to their great grandmothers, as they are to the present races of out-door labourers and uneducated savages.

The following paper was then read by the Author:—

On the EVIDENCE *for* MR. MCLENNAN'S THEORY *of the* PRIMITIVE HUMAN HORDE.

By G. L. GOMME, Esq.

WHEN we come to look into Mr. McLennan's evidence, and to examine his theory on the origin and development of social forms, we are struck by the fact that he nowhere states the evidence for his first stage—the primitive human horde. He starts "from the conception of populations, the units of which were homogeneous groups or tribes," and which did not possess any system of blood kinship[1]; but beyond the fact that the assumption thus made fits in remarkably well with all the later stages of his theory, which are amply supported by evidence, he does not critically examine the evidence for the primitive horde. Even the title—the horde—which I have ventured to assume is

[1] Studies in Ancient History," pp. 127, 153.

that which best expresses Mr. McLennan's meaning, is only used by Mr. McLennan himself incidentally; and occasionally, as in the quotation just used, it gives way to the less exact terminology of "populations," "groups," or "tribes."

It is singular that not only Mr. McLennan himself, but none of his able critics has definitely met the proposition which the theory of the primitive human horde clearly places before us. It is just possible that when Sir Henry Maine appeals so forcibly to biology and to savage society for examples of his own theory of parental groups against Mr. McLennan's theory of the horde, he may have in his mind exactly that large body of evidence which Mr. McLennan has left untouched. But then Sir Henry Maine does not proceed to examine this evidence.[1] Nor does Mr. Lang, the greatest living authority who supports Mr. McLennan's theories.[2] In fact, almost all the enquiries which have taken place since Mr. McLennan's researches directly opposed those of Sir Henry Maine, have been bounded and limited by the theory that the earliest social unit was necessarily the family.[3] The family appears in history, in its most archaic form, as the unit of the genealogic tribe. But the tribe, made up of these family units, is just then entering upon its career in the formation of nations—is, in fact, just on the threshold of modern history. And at the back of this union of families is that large body of custom, whatever it may prove to be, from which kinship-formed tribes were developed. Under whatever form of society this body of custom existed, there is no part of it which entitles us to use such a term as "family" in connection with it. It was not a family unit in independence; it was not a group of family units bound by kinship ties. If, therefore, we may properly dismiss the term family as a scientific appellation for the earliest group of human beings, and if we may consistently call it the horde, borrowing the term from Mr. McLennan, we shall, at least, be clearing the way to prevent a misconception from a confusion in terminology. It may be as time goes on, and, as evidence increases, that some modifications in the conception of the horde will arise; but the point to be insisted upon now is that the term horde does not convey any special associations with modern history, and that it most probably will, therefore, gradually assume the meaning with which scientific research will in future endow it.

Mr. McLennan's conclusions, derived, be it observed, from

[1] *See* "Early Law and Custom," p. 192.

[2] "Early History of the Family," in his "Custom and Myth."

[3] *See* Mr. C. S. Wake's article on "The Primitive Human Family," in the "Journ. Anthrop. Inst.," vol. ix; and Mr. Lang concedes this point to Sir Henry Maine, in his "Custom and Myth."

phenomena found to exist in savage races inhabiting all parts of the world, may be shortly stated as follows:—

1. That the earliest human mode of living recognised no basis of blood relationship, the association between the sexes being best described by the term promiscuity, and the children at this stage belonging to the horde.
2. That there existed within the horde the conception of stocks, such stocks being found to be always exogamous, *i.e.*, the members of any stock may not marry within their own stock, but must obtain wives, or husbands, from other stocks.
3. That the scarcity of women produced a rude system of polyandry, *i.e.*, one wife between several husbands.
4. That blood relationship to the mother first became recognised, and hence arose a system of kinship through females only.
5. That the constant state of war between group and group necessitated the capture of wives from foreign groups.
6. That in course of time this system of kinship through females and exogamous marriages would produce heterogeneous groups, each group containing within itself members of several other groups (the children of the women of such other groups).
7. That these heterogeneous groups would therefore contain within themselves all the conditions of exogamous marriages, and that hence members of the same *local* group, being of different kinship, could marry.
8. That from these conditions of early society would arise a recognition of paternity, and hence a system of kinship through males as well as females.

Now it is clear that to make the various stages of this theory perfectly consistent one with another, we ought to know something about the conditions which formed the human horde from which was developed all the subsequent phenomena of early human society. Mr. McLennan has arrived at his first stage by the exhaustive examination of the evidence which proves his later stages, and he practically postulates that granting his general conclusions the human horde must have been the earliest stage of man's existence. To Mr. McLennan himself we may perhaps be inclined to admit his full right to so deal with the subject; but it is, at all events, a matter which deserves some degree of independent treatment, and it is in this light that I propose to deal with it. My question is, Is there any evidence, other than that based upon simple argument, of the earliest stage of human society, the primitive horde?

In the first place we will turn to the biological evidence. At the outset it is important to note that the great authority of Mr. Darwin cannot be claimed so completely on the side of the origin of society in the parental group as Sir Henry Maine would seem to imply. He quotes from Mr. Darwin ("Descent of Man," I, 362), a passage from which I will only re-quote one sentence, "in primeval times men . . . . would probably have lived as polygamists or temporarily as monogamists." But Mr. Darwin has another passage ("Descent of Man," I, 84) which directly opposes the theory of original parental groups. "Some authors," he says, "suppose that man primevally lived in single families; but at the present day though single families, or only two or three together, roam the solitude of some savage lands, they are always, as far as I can discover, friendly with other families inhabiting the same district." It is this complex group then, from which the history of man has to start. But there are other points insisted upon by Sir Henry Maine, and these are, rightly enough, those where Darwin, summarising his evidence as to man's primeval condition, asserts that "their intercourse, judging from analogy, would not then have been promiscuous," and they "would not at that period have partially lost one of the strongest of all instincts common to all the lower animals, namely, the love of their young offspring" (II, 367). These results from the biological evidence are brought to bear against Mr. McLennan's conception of the characteristics of the horde, and they must form the starting point for our researches.

Mr. McLennan has used certain expressions in his description of the condition of early man which have proved to be not only the centre point of attack by those who oppose his general theory, but which have entirely diverted attention from much more important conclusions resulting from the theory. The chief of these expressions is that of "utter promiscuity" as a description of the marital conditions of early man. Now of "utter promiscuity" there is no evidence from the types of savage society now extant. The nearest we get to it is "temporary monandry," as Mr. Darwin terms it, which consists of the choice by a woman of a husband, who is husband just so long as offspring is begotten and requires protection. That the period during which man, woman, and child kept together was in the earliest natural development of human life of much longer duration than modern civilisation allows to be necessary is asserted by Mr. Fiske and allowed by Mr. Herbert Spencer.[1] "Children not so soon capable of providing for themselves had to be longer nurtured by female parents, to some extent aided

[1] "Principles of Sociology," i, pp. 56, 630.

by male parents." But as soon as offspring were capable of taking care of themselves the parental tie was snapped. The children would certainly go their own ways—the male to become in his turn a hunter and fisher, more or less connected with his fellow man, the female to become the partner of her accepted lover. It is impossible to conceive parental affection extending beyond the period when such steps were taken, and the evidence of later marital relationships makes it impossible to conceive that the union of the parents would continue.[1]

But just as there is no excuse for calling this system of temporary monandry by such a historical term as family, so there is no excuse for using the term "utter promiscuity." There is no reason again to suppose that "paternity" was uncertain and, was, therefore, incapable of being recognised. Both paternity and maternity were certain, and they were fully recognised. Where the break occurs between this primordial system and the later system is that the recognition was simply one caused by natural instincts, and that it was temporary in its duration and quickly became lost. In short, the relationship between the sexes was a *natural* and not a *political* relationship. Because primordial men did not, throughout life, recognise a bond of affection for offspring, and did not use the potent fact of kinship to constitute a social unit, it does not follow that they did not know of the paternal and maternal instincts, were not influenced by sexual jealousy, and did not know of the connection between parent and child. All that can be said of them is that they did not use these several natural facts to produce artificial, or, as it is best to say, political combinations. Biology therefore teaches us this: that our primordial ancestors roamed the earth, possessing all the natural instincts, but without the capacity of using these instincts for any political purpose. There is a vast difference between the absolute non-recognition of the ties of parental kinship, and the non-use of them for the purpose of generating a new departure in the ways of man, and in this difference will be found all that is to be said against Mr. McLennan's terminology. If we can only thoroughly grasp the fact that the ties of kinship, whether male or female, are in every sense *artificial* conceptions, and that consequently their introduction must have been preceded by a long period of *natural* combinations of human beings, we gain the first important step in the history of the primitive human horde.[2]

[1] Many examples exist in savage society where the parents separate after the birth of a child.

[2] Mr. McLennan says "the development of the idea of blood relationship into a system of kinship must have been a work of time."—"Studies in Ancient History," p. 84.

Before the ties of kinship could have formed societies, children must have habitually stopped with parents, grandchildren with grandparents, cousins with their kindred. How recent in the history of man such artificial associations were made cannot, of course, be ascertained, but I shall have something to say upon this point later on. In the meantime, the fact to notice is that the primitive human horde was kept together by quite other influences than kinship, and our next step must be to enquire what these influences were.

Mr. McLennan has only hit upon a portion of the true solution. In a passage which contains a curious mixture of terminology, but which evidently refers to "the earliest human groups [which] can have had no idea of kinship," he observes that the "fellowship between the members of such a group would be that they and theirs had always been companions in war or the chase—joint-tenants of the same cave or grove."[1] Companionship in danger, and food-winning, and contiguity of occupation are here indicated as the ties of association. Mr. Lang introduces us to one other probable explanation of the ties that held the horde together. Noting that totemism "arose at a period when ideas of kinship scarcely existed at all," he goes on to remark that "above all the very nature of totemism shows that it took its present shape at a time when men, animals, and plants were conceived of as physically akin."[2] This is a very important factor in the early life of man. Clearly if the first-formed groups of man were based upon a totem-organisation and not a blood tie; if totemism includes a common worship of some object of nature; and if such worship is produced by an incapacity in man's early conceptions to separate his own being from animals, plants, and other nature objects around him—clearly we must look for evidence as to the earliest social organisation to such of the forces of nature as might have determined the range of contiguity of occupation, or the means of establishing common interests.

Before adducing any evidence as to man's early associations with nature, it seems worth while to enquire whether in the lower organisations there is any evidence as to forces which produce groups other than those founded upon the ties of blood. For this purpose I will make one quotation from Darwin, which exactly explains the initial facts which I am anxious to accentuate. Mr. Darwin says "Most animals and plants keep to their proper homes and do not needlessly wander about. We see this with migratory birds, which almost always return to the same spot. Consequently each newly formed variety would

[1] "Studies in Ancient History," p. 84.
[2] "Custom and Myth," p. 262.

generally be at first *local*, as seems to be the common rule with varieties in a state of nature; so that similarly modified individuals would soon exist in a small body together, and would often breed together. If the new variety were successful in its battle for life it would slowly spread from a central district, competing with and conquering the unchanged individuals on the margin of an ever-increasing circle."[1] How clearly this explanation meets the phenomena to be met with in man's earliest stages will, I think, be shown as we proceed.

It is neither necessary nor expedient to examine now any considerable mass of evidence relative to man's attitude towards the great powers of nature. The subject has not yet been approached with due regard to its importance as one of the determining features of man's earliest ways of life;[2] but there is sufficient accumulated evidence for us to be able to give some typical instances of the forces that kept the primitive human hordes together.

When in the mid-pleistocene age of geology we find that man has made his way into Europe as far west and north as Britain, we find him in the presence of abundance of food, but with difficulty guarding himself against the wild animals. Innumerable horses, large herds of stags, uri, and bison were to be seen in the open country; three kinds of rhinoceros, and two kinds of elephant lived in the forest; the hippopotamus haunted the banks of the rivers, as well as the beaver, the water-rat, and the otter; there were wolves also, and foxes, brown bears and grizzly bears, wild cats, and lions of enormous size; wild boars lived in the thickets; and as night came on the hyænas assembled in packs to hunt down the young, the wounded, and infirm.[3] Not daring to penetrate into the vast forests that stretched themselves around him, but keeping to the river courses man thus progressed from point to point over the earth's surface, absolutely bound by the conditions of his life to subordinate himself to the external forces which kept him confined to very restricted areas for his wanderings. The narrowing down of the territorial lines of progress narrowed down too the forms of the social grouping; and an examination of the geologic evidence confirms the view that as there was no necessity for, so there could have been no thought of, artificially formed societies. The successive waves of migrationists were bound together by the

[1] "Descent of Man."

[2] Mr. Spencer, "Principles of Sociology," cap. iii, "Original External Factors," brings clearly together the chief heads of this subject, and concludes (p. 39) "that the earlier stages of social evolution are far more dependent on local conditions than the later stages." But it is singular how little this important conclusion is brought to bear upon Mr. Spencer's subsequent researches.

[3] Boyd Dawkins' "Early Man in Britain," p. 137.

accumulated and accumulating fears of the dangers that surrounded them.

Such fears found their ultimate expression in a system of nature worship, which even now forms a large portion of the creeds of savage people. The Aka of Assam, we are told by Dr. Hunter, "fears the high mountains which tower aloft over his dwelling; he fears the roaring torrents of the deep glen; and he fears the dense and dark jungle, in which his cattle lose their way; these dark and threatening powers of nature he invests with supernatural attributes; they are his gods."[1] This forcible example is but an instance of what is met with all over the world. Among all the hill tribes of India the mountains are the abode of demons. Among the Khumis, each peak in the native hills is held to be the watch-tower of a god.[2] A hill in Rambon Island is supposed to be the abode of evil spirits.[3] Nothing but positive orders and accompaniment by us would, we are told, induce the Mugs to trespass on many of the hill tops, which were inhabited, they said, by demons.[4] The Nicobar islanders have a good and evil spirit, the latter resides in the woody interior of the island.[5] The extensive forests untrodden by human foot, are believed by the Coorgs to be reserved for the abodes of deified heroic ancestors.[6] And so it is all over the world.[7] Hemmed in and confronted on all sides by such enemies, the primitive human horde was kept together by outside forces, not by internal arrangements. As man spread over the earth, treading the river paths for the first time, skirting the fearful forests, and looking upon the distant hills with something more than awe and wonder, fighting his way before his fellow animals in the struggle for existence, there is ample room for the conception of a vast period of time for the existence of the horde—a period which even Plato contemplated when he measured the difference between the social forms of the Cyclopes and those of the Greeks of his day.

That man's experiences during this long period of time have materially affected his later life there cannot be any doubt. Many conceptions which originated with the horde have sur-

[1] "Statistical Account of Assam," i, 356.
[2] "Journal As. Soc. Bengal," xv, 63.
[3] *Ibid.*, iv, 83.
[4] *Ibid.*, x, 430.
[5] "Journ. Anthrop. Inst.," iii, 4.
[6] Richter's "Manual of Coorg," 166.
[7] I would refer particularly to Mr. McLennan's articles in the "Fortnightly Review" vols. xii and xiii, on "Tree and Animal Worship," and to the "Journal of the Ethnological Society," new series, vol. i, pp. 23, *et seq.*, for a summary of the evidence. Mr. Walhouse's "Ragbushes and Kindred Observances," "Journ. Anthrop. Inst.," vol. ix, pp. 97–106, should also be consulted.

vived after the formation of kindreds. All that large system of nature worship, which dictated to the primitive settlers in villages that the clearings in the forest could not be made till the tree deities had been compensated,[1] which taught that the earth spirit must be propitiated at the founding of a new village, and that the earth demons fought against the growth of corn or other agricultural produce,[2] originated when man had not progressed beyond the stage of the primitive horde; and only at last gave way when man's conception of the bonds of kinship had developed into a worship of ancestral spirits. Again, it has already been observed that the conception of totemism originated in the horde, and yet lasted down very late when tribes had been formed upon the basis of kinship. The strength of these survivals of portions of the organisation of the primitive horde, may well lead us on to enquire whether there may not be any survivals of the horde itself, or at all events of groups of human beings so little advanced along the line of development formed by kinship as to show us a near type of what the primitive horde must have been.

Whatever may have been the district in which man was first evolved from his ape-like progenitors there is considerable evidence to prove that Central Asia is the district from which successive migrations have flowed. It may be taken for granted, I venture to suggest, that the effects of migrations must have been enormous in modifying the social conditions of the primitive hordes; and that hence the nearer the centre of the original home the more likely are we to meet with types nearer to the original condition. But whether it be admissible or not to advance these arguments drawn from the natural history of man as in any way accountable for facts in his social history, it is certainly not unimportant to note that the regions of Central Asia do supply us with types of human hordes the most nearly coincident to what Mr. McLennan has prepared us to expect from the evidence he has adduced as to the origin of the later forms of society based upon kinship. Leaving for other consideration such types of roaming groups, not to be identified with kinship-formed groups, as may be found in the Wood Veddahs, who roam about in pairs; the Bushmen, who wander in small isolated families; the Fuegians in clusters of a dozen or so,[3] we will, as a working hypothesis, confine our immediate attention to the Central Asian evidence.

[1] See a conspicuous example of the superstitions of the woodcutters in Hunter's "Statistical Account of Bengal," i, 312.

[2] I have collected some examples of this in my "Folklore Relics of Early Village Life," cap. vi.

[3] Spencer's "Principles of Sociology," i 482.

The hill tribes of India afford the most singular specimen of the primitive horde, both in respect of the external forces which keep it together, and of the internal organisation which regulates the conduct of individuals to one another. This specimen is the Abor tribe of the Assam Hills. Of the external forces which alone form the means of keeping the horde together we have the following evidence: The religion of the Abors consists of a belief in those sylvan deities to each of whom some particular department in the destiny of man is assigned. A mountain called Rigam is the favourite abode of the spirits and is held in great awe, no one being able to return from its summit. Losses of children are attributed to the spirits of the woods, and retaliation is made by cutting down trees till the loss is made good.[1] Clearly with such beliefs in the surrounding nature gods there is little room, as there is scarcely any need, for the development of a social system based upon any other observable phenomena than the greatest one of all, namely, locality. Pressed on all sides by the fear of mountain deities and tree deities the outcoming life from such a set of conditions must depend almost entirely upon local not personal influences. And such we find to be actually the case.

It is a pity that minute examination of the social system of the Abors has not been made. One thing it is very important to obtain information about, namely, the existence of totemism. If the Abors are a typical example of the primitive horde they would be constituted upon a totem system, or would have the germs of the totem system within their group. Their worship of nature and their special worship of tree deities would lead us to expect some traces of totemism. But no traveller amongst them has recorded any such traces. It is, however, important to note than Mr. McLennan has found sufficient general evidence to be able to state that "the totem stage appears to have been passed through by numerous tribes of Central Asia";[2] and one of these tribes I have been able to discover is a near neighbour to the Abors. Of the Khasias, Dr. Hunter says "there is no caste system, but each clan is called after some object of nature, as the *oak* clan, the *crab* clan, &c., and these names entail certain restrictions beyond which intermarriage is forbidden."[3]

Leaving this evidence for what it is worth, and I would suggest it is worth further enquiry, we have yet to note one definite fact about the Abors which goes far to establish the theory that they represent a type of the primitive horde. Though externally they make up one group—a human horde that is—inter-

[1] Hunter's "Statistical Account of Assam," i, 337.
[2] "Fortnightly Review," 1869, xii, 418.
[3] "Statistical Account of Assam," ii, 218.

nally there are no traces of the cohesion resulting from the ties of recognised kinship. We are told that "the Abors, as they themselves say, are like tigers—two cannot dwell in one den; and their houses are scattered singly or in groups of two and three over the immense extent of mountainous country occupied by them. The Meris say that whenever a few families of Abors have united into a society, fierce feuds about women and summary vengeance, or the dread of it, soon breaks up or scatters the community."[1] In the unpleasant details of the internal condition of the Abor people we meet with Mr. Darwin's example of temporary monandrous groups in *local* contact with each other, the whole forming, as I would submit, a type of the primitive human horde. The entire absence of the ties of kinship prevents the growth of family power within the horde, while the connection between the various sections is shown by the marriage intercourse of their members. Kept together by outside forces, possessing no doubt some forms of the totem system, which is a binding power between the units not depending upon blood ties, and being entirely free from the ties of kinship, these Abor people present a very good example of the horde stage of human society.

If we extend our observations from this Abor type of the primitive horde to any parallel types we are at once reminded of the famous example of the Cyclopes. Sir Henry Maine, equally with Plato and Aristotle, adduce the Cyclopes as evidence of the parental origin of human society. The passage in the "Odyssey" is thus rendered by Mr. Lang: "and we come to the land of the Cyclopes, a forward and a lawless folk, who plant not aught with their hands, neither plough. These have neither gatherings for council nor oracles of law, but they dwell in hollow caves on the crest of high hills, and each one utters the law to his children and his wives, and they reck not one of another." But in confining attention to this one passage only it has been overlooked that the groups of men, women, and children thus described were bound together by some sort of common tie. Thus Polyphemus in his agony calls for assistance "on the Cyclopes who dwelt about him in the caves along the windy heights." This tie we know was not one of recognised kinship for "they reck not one of another;" and it must have been the common dangers, the common fears of the surrounding nature spirits, in short, all the recognisable forces which formed the primitive human horde, and which we have found existing

[1] "Asiatic Society of Bengal," xiv, 426–428; Hunter, "Stat. Account of Assam," i, 351. It is asserted by Dalton that the Abors and the Meris are of the same race. But Dr. Hunter pointedly states the many objections to this theory arising from the difference of customs, religion, &c., *ibid.*, p. 333.

among the Abors. If we wanted a short summary of the social condition of the Abor people Homer's language about the Cyclopes would in every way answer the purpose; and conversely, it appears to me that a more elaborate description of the Cyclopes is to be obtained from what is known of the Abors. Clearly such an exchange of definitions indicates a social parallel of remarkable closeness.

The close parallel which thus clearly exists between the Abors and the Cyclopes as types of a social stage in man's history is of great importance in a scientific sense. Both geographically and chronologically they are discontinuous; and discontinuity, to use Mr. Wallace's term, of two identical types, argues great antiquity for the type. There are nearly 4,000 miles of territory and nearly 3,000 years of history separating the two peoples. The safe conclusion to draw from these two important factors in the case, is that both Abors and Cyclopes belong to an epoch in human history which witnessed the continuous population of this long stretch of territory by groups of the Abor and Cyclop type.[1] It may be impossible to prove that this epoch may be identified with an epoch drawn from the records of other sciences; but if the theory which has been advanced is worth anything, it ought to stand the test of comparison with the established facts of geology.

These types of the primitive human horde, as also the conception of it suggested to Mr. McLennan by his researches into the earliest developments from it, enable us safely to draw one conclusion, namely, that unorganised itself, or at all events very loosely put together, it was not capable of meeting any strongly organised opposition from powerful enemies. Such is the decisive evidence of the Abor type; the Cyclopes declined to go to the assistance of their injured comrade; and of one parallel type which I have noted from Africa, the Mashona tribe of the Transvaal District, it is stated that "they live by families [groups] on separate hills, and though they intermarry, they

[1] Another example of such a group may be adduced from the remarkable tradition of the Northern Kuris preserved in the Sanscrit texts, translated by Mr. Muir, see Part II, p. 336. It is quoted by Mr. McLennan in his "Studies in Ancient History," p. 119. And to show that the Abors are but a type of the general aboriginal Indian group I would quote Sir Alfred Lyall's very suggestive description of the Bheels. They are "all sub-divided into a variety of distinct groups, most of them apparently muddled together by simple contiguity of habitation or the natural banding together of the number necessary for maintaining and defending themselves."—"Asiatic Studies," p. 160. And he goes on to say that "we might make out roughly, in central India, a graduated social scale, *starting from the simple aboriginal horde at the bottom* and culminating with the pure Aryan clan at the top; nor would it be difficult to show that all these classes are really connected and have something of a common origin." This passage is a remarkable confirmation of the conclusions I had arrived at before I saw it.

keep up perpetual feuds; it would be most difficult to fuse this mass into a united nation [group]; their very division into units must ever prevent their holding their own against any organised power."[1] Now the only organised opposition which the primitive horde could have met would have arisen from hostile hordes of man; and geology clearly establishes that such an opposition was obviated by the immense area over which the earliest races of man spread. It is quite impossible to read the evidence as to the records of the earlier stone-age man, which Mr. Worsaae has supplied in his "Pre-History of the North," without being struck by the fact that a constant spreading out over the unoccupied lands always met the pressure of population. And it is curious to compare with this Mr. Boyd Dawkins' description of the earliest races of Britain. Whether by accident or design, whether a strict deduction from geologic evidence or not, Mr. Boyd Dawkins makes the difference between the man of mid-pleistocene age and later comers to be that the former were hunters and fishers without social organisation, while the latter appear in tribes. It may be premature to assume that the geologic evidence so nearly meets the anthropological as to assert that early stone-age man spread over the earth in hordes uninfluenced by the ties of kinship; but it becomes an admissible suggestion that the two branches of scientific evidence thus brought face to face may conjointly yield the conclusion which has been first deduced from other data.

There is yet one other argument to consider before concluding our enquiry. Granting that the first spread of man might have been by hordes, uninfluenced by the ties of kinship, successive waves of migrations, bringing with them the necessary conquest of the descendants of previous ages of migrationists, must have been bound together by closer ties than those that bound the horde. As already we have laid stress upon the fact that, as there was no necessity for, so there was no thought of, a closely knit, artificial society during the earliest periods of man's migrations, it is correlatively necessary to lay stress upon the fact that when later waves of migration spread their way over the earth, there then arose a necessity for artifically formed society. Man had then to meet man in conflict. To successfully overcome the unorganised hordes of hunters and fishers, the formation of which we have just been examining, organised bodies must have been formed. Everything in geologic evidence tends to confirm this proposition. There is nothing in the records of the earlier stone-age people, representatives, that is, of the

[1] "Further Correspondence Relating to the Transvaal" (House of Commons), c. 4646 of 1886, p. 118.

primitive human horde, to tell of any development, even after long ages of settlement, in the social forms. But in the later stone-age people, representatives, that is, of the first wave of conquering tribes, there is much to tell of a development in the social forms. Possessing new and improved weapons, which became the object of barter, accompanied by whole trains of domestic animals, oxen, sheep, swine, and horses, penetrating into the forests, which had only as yet been skirted, the later stone-age people must have been organised upon some tribal basis unknown to the earlier hordes. That this basis was one of kinship, is the conclusion to be drawn rather from anthropological than geological evidence; but the latter goes far towards proving such a conclusion from its own records, when it is considered that now, for the first time, the dead are carefully buried, indicating that the ties of kinship had already influenced human thought.

It would appear then, that the first ages of migration witnessed too the formation of tribal organisations based upon the ties of kinship. Such tribal organisations, according to the researches of Mr. McLennan, had, for their distinctive features, the reckoning of kinship through females, and the practice of polyandry. Explanations have been offered as to the origin of female kinship and of polyandry, but neither the uncertainty of paternity in the first case, nor the practice of female infanticide in the second case, can be said to be sufficient for all the facts. Already we have noted the objections to the theory of uncertainty of paternity, and great authorities have declared against the theory of female infanticide.[1] If, then, the conditions of the primitive human horde, both in its normal state and at the time when it met its first human enemy, answer in any degree to the descriptions which my arguments allow us to formulate, they ought, also, to give some clue to the origin of the two principal phenomena which Mr. McLennan has adduced as belonging to man's earliest development from the horde, namely, polyandry and kinship through females. The horde possessed, or had developed, the principles of totemism and exogamy. To these, at the time of the great migrations, were super-added the principles of polyandry and kinship through females, and the point we have to consider is: Do these later developments show anything of cause and effect? are the facts of migration sufficient to bring about the development of tribal society based upon polyandry and kinship through females?

Sir Henry Maine has already suggested that the scarcity of

[1] *See* Fison and Howit's "Kamilaroi and Kurnai," p. 174; Sir Henry Maine's "Early Law and Custom," p. 212.

women, and consequently polyandry, might be due to the wanderings of our race;[1] but the examples he quotes are all historical, and are hence limited and isolated in extent. No limited or isolated practice can, however, account for a phenomena in human history which is claimed to be one of the stages through which mankind must have passed on its way to civilisation, and Sir Henry Maine is not slow to point out this very material objection. But pre-historic migrations were neither limited nor isolated.[2] They covered almost all the lands to which the earlier stone-age people, the primitive hordes, had penetrated. It is quite conceivable that the earliest adventurers would seek to be accompanied by some women, and it is equally conceivable that the number of male adventurers would greatly exceed the female. Historical migrations have ever been so, and so must pre-historical migrations have been. Such an initial inequality between the sexes would probably become intensified as the dangers of the migrations increased, and hence would arise the rude system of polyandry. Compelled thus to acknowledge ties which had previously not been so prominently thrust forward, the new migrationists would soon perceive that the fact of kinship was of enormous importance in keeping their own race distinct and clear from the people they were conquering or enslaving.[3] The war was not now one between man and nature only; but between man and man. The fight was harder, and the organisation of the conquerors must have been closer, and it was formed upon the conception that there could be no affinity between the new coming conquerors, and the scattered hunting and fishing people—a conception that could only become of supreme importance if the ties of observable kinship were gathered up and utilised for political organisation. Thus would originate kinship groups, as opposed to local groups; and thus polyandry and descent through the female would be the first distinguishing marks of the earliest kindreds.

Although I do not lay claim to the idea that such a hypothesis, as I have here ventured to formulate, can be absolutely proved by the only science which is capable of affording such proof, namely, anthropology, yet I suggest that it is worth while putting it forward for consideration. In the first place it affords, so far as it is at all tenable, a conception of the earliest form of human society which entirely fits in with the

[1] "Early Law and Custom," p. 212.

[2] Geological changes and meteorological changes as well as the consequent changes of flora and fauna must have been causing over all parts of the earth perpetual emigrations and immigrations.—Spencer's "Principles of Sociology," i, p. 18.

[3] *Cf.* Worsaae's "Pre-History of the North," p. 26.

theory of one important authority—Mr. McLennan—on the later developments of society. In the second place no one has yet supplied the necessary groundwork upon which such an enquiry may be based. So far, then, as my researches are in accord with Mr. McLennan, and so far as they fill up a gap in anthropological science, I venture to hope that they may be of service as a working hypothesis for future research.

Discussion.

The President thought that the author had done good service in bringing to notice a definite stage in the theoretical course of human evolution, which had as yet received no generally accepted name. It was the stage, as the author had shown, before any recognised system of kinship existed, and before there were any political bonds, but one in which people were aggregated solely under the compression of external influences. He had, however, some doubt whether the stage in question was aptly enough expressed by the word that the author desired to use for it. "Horde" is a term of Asiatic origin, still and always used to express aggregations of men living under very different social conditions to those just supposed. It is true that in colloquial English the word horde is often used in a vague sense, and this he suspected to be due to some confusing similarity in sound between it and the word herd, which he need hardly say was of entirely different origin and meaning. Neither did he wish to convey the slightest intimation that the author had himself unintentionally confounded the two. Still, it seemed to him that the word *herd*, though not free from objection, was more appropriate to the social stage that the author desired to express, than the word horde.

The Author in reply to the President said that the reason why he had chosen the word horde was because Mr. McLennan had already used it. Moreover, it had not come to have any very great political meaning yet, and in time the scientific meaning which was now sought to obtain for it would in the end overshadow what little political meaning was attached to it in connection with the Huns of Attila, and other famous "hordes" of men. The term "herd" was already usefully and definitely used for animals, though there was nothing in its signification which would not suit the definition he sought to give to the period of human life which it might represent. As to the examples he had given of the primitive human horde, he by no means suggested that they were absolutely types of this far-off period of human history; all that he suggested was that they gave us the nearest parallel to what the primitive human horde must have been, although they might have reached their modern form by degradation from higher civilisation, for degraded types of humanity probably retraced some of their former steps of progress.

A Note on the Dieyere Tribe of South Australia by Mr. Samuel Gason, communicated by Mr. J. G. Frazer, was read by the Secretary. This is printed in the Miscellanea at the end of the present number of the Journal.

JUNE 14TH, 1887.

FRANCIS GALTON, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The election of Sir WALTER BULLER, K.C.M.G., F.R.S., of 52, Stanhope Gardens, was announced.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the UNITED STATES GEOLOGICAL SURVEY.—Dinocerata, a Monograph of an Extinct Order of Gigantic Mammals. By Othniel Charles Marsh.

From the ASSOCIATION.—Report of the Fifty-sixth Meeting of British Association for the Advancement of Science; held at Birmingham, in September, 1886.

From the SOCIETY.—Proceedings of the Royal Society. No. 254.

—— Proceedings of the Royal Geographical Society. 1887. June.

—— Papers and Proceedings of the Royal Society of Tasmania for 1886.

—— Journal of the Society of Arts. Nos. 1801–1803.

—— Boletim da Sociedade de Geographia de Lisboa. 6ª Serie. Nos. 9, 10 e 11.

—— Bulletin de la Société d'Anthropologie de Lyon. Tom. v. 1886.

From the SCOTTISH GEOGRAPHICAL SOCIETY.—The Scottish Geographical Magazine, Vol. III, No. 6.

From the EDITOR.—Nature, Nos. 917–919.

—— Science, Nos. 224, 225.

—— The Photographic Times, Nos. 296–298.

The EARL of DUCIE, F.R.S., exhibited three perforated stones from Scotland, known locally as "Mare-Stanes," and the following note on the subject was read by the Secretary:—

EXHIBITION *of* THREE "MARE-STANES," *or* "HAG-STONES."

By the EARL of DUCIE.

THE following is an account of three "Mare-stanes," *Anglicè* Hag-stones, received by Lord Ducie, from Marykirk, Kincardineshire, N.B., May, 1887.

One of the stones has two human teeth inserted and fixed in the natural holes in the stone. It was known to have been 70 years in one house, and was given to Mr. A., of Marykirk, by an old lady. She had used it to ward off bad dreams.

The other two are thus described by the person who procured them: "Mare-stanes were very common thirty years ago in this district (Marykirk), and many are used yet, but those who are in possession of them do not like to own it. They are still common in the fishing villages along our coast.

"The old grandfather of Mrs. N. sometimes comes to Marykirk on a visit, brings his Mare-stane in his pouch, and hangs it in his bed. He comes from Stonehaven, and is an old fisherman.

"Sandy M's. wife, while she stayed at B., always kept the Mare-stane in the bed; and a Mrs. G., of Edinburgh, a lady who came to B. many years, always liked that stone in her bed.

"Old Susan S. assures me that when the females of a house had all the work, and were 'stinted' to do a given amount of work at the spinning wheel before they got any supper, and so much before they went to bed, they were very liable to take the 'Mare' (*i.e.* nightmare) owing to anxiety connected with their stints, and the 'Stane' was a regular preventive. Married ladies, she says, when in an interesting condition, were very particular in having the Mare-stane in the proper place, and she has known 'Stanes' hung in byres, behind cows expected to calve, to ensure safety.

"How it is that the natural worn hole gives this charm, I cannot tell.

"I am assured that there are not a few in our village besides these, but one does not care to hunt for these sacred relics. We are not a superstitious people, but somehow a veneration and reverence is set on any thing or custom which our mother or grandmother had or did."

Dr. John Evans, F.R.S., writing to Lord Ducie on the subject gave the following references:—Brand's "Popular Antiquities," by Ellis, 1849, vol. iii, 279–280, in referring to nightmare, quotes thus from Aubrey's "Miscellanies," p. 147:—"To hinder the nightmare, they [people in the north of England] hang in a

string a flint with a hole in it (naturally) by the manger; but, best of all they say, hang about their necks, and a flint will not do it that hath not a hole in it. It is to prevent the nightmare, viz., the hag, from riding their horses, who will sometimes sweat at night, the flint thus hung does hinder it." He adds, "Grose says, a stone with a hole in it, hung at the bed's head, will prevent the nightmare; it is therefore called a hag-stone from that disorder, which is occasioned by a hag or witch sitting on the stomach of the party afflicted. It also prevents witches riding horses; for which purpose it is often tied to a stable key."

In "Notes and Queries," series vi, vol. 1, p. 54, is given an abstract from an old book printed in Queen Elizabeth's time, headed "Of the Nightmare," describing a "fonde foolishe charme" as follows: "Take a Flynt Stone that hath a hole of hys owne kinde, and hang it ouer hym . . ." to which the written charm, as there related, is to be attached.

Discussion.

Dr. Evans observed that it was the first time that he had heard of the use of human teeth in connection with "hag-stones" or "witch-stones." It seemed possible to account for the idea that horses were ridden during the night by witches, from the animals, when ill, being found in a state of sweat in the morning, for which such exercise might seem to account. But in what manner a stone with a hole in it sufficed to exclude witches, or how the nightmare was transferred to the human being, involved more difficult questions. The great prevalence of the use of the hag-stones in the district of Marykirk was remarkable. The use of "lucky-stones" was common, and he had cited intances in his "Stone Implements." The use of a hollow stone to hang up in our stables to prevent the Ephialtes, or nightmare, is mentioned by Sir Thomas Browne.—"Vulgar Errors," Bk. v, ch. xxii, sec. 7.

Mr. Rudler remarked that the three stones exhibited varied much in mineralogical characters. One was a water-worn fragment of limestone, drilled by a boring mollusc; another was a piece of quartz, probably from the crystalline schists of the east of Scotland, containing a greenish chloritic mineral, the natural removal of which seemed to have formed the holes in the stone; while the third was a jaspery pebble, probably derived from a conglomerate in the Old Red Sandstone.

A perforated stone is sometimes known in the north of England as a *Hog-stone*, and in Harland and Wilkinson's "Lancashire Folk-Lore" (p. 154), it is said that a hog-stone, or stone with a hole in it, is tied to the stable-key, in Lancashire, to protect horses, or is hung at the head of the bed to protect the farmer and his family.

In the south of England, it is not uncommon to find flints with natural perforations, and these are commonly regarded by children as "lucky-stones." In Butler's "Hudibras," we read of a sorcerer who could—

> "Chase evil spirits away by dint,
> Of sickle, horse-shoe, and *hollow flint*."

The following paper was read by the author:—

HITTITE ETHNOLOGY.

By Captain C. R. CONDER, R.E.

THE President having done me the honour to ask me to read a paper about the Hittites, I have here sought to show the general considerations which appear to guide us to a right understanding of their race, religion, language, and customs. It is a question in which I have been interested now for seven years, and I hope that I have not failed to read every work of importance that has been written on the subject.

I propose to assume that the Kheta known to the Egyptians, the Khatti conquered by the Assyrians, and the sons of Heth mentioned in the Bible are the same people. This has been disputed, but since it is held to be the case by Prof. Sayce, Dr. Taylor, and M. Perrot, and was, I believe, recognised by Lenormant, and since these writers have given their reasons for such a conclusion, it appears to be sufficiently recognised to be certain of final acceptation.

The study of any people of antiquity rests, according to Max Müller, on a knowledge of physical appearance, language, and religion. A race may lose to a certain extent its characteristic type through difference of climate, of food, or of habit, or through admixture of foreign blood. It may adopt a new foreign religion; it may forget its original language; but if we can find it preserving a type, a religion, and a language which all belong to one original pure stock, we are then able to recognise the relation of the stock to others of the same human family.

It might at one time have appeared incredible that we should ever know anything of the Canaanite tribes which preceded Israel in Palestine, and which were almost exterminated in the south at the time of the Hebrew conquest; but it was quite as unexpected in the last century that we should ever recover Sennacherib's account of the siege of Jerusalem, or know the history of Nebuchadnezzar from official records. Since we have

in Egypt pictures which are known to represent Hittite kings and warriors, and statues of the gods with hieroglyphic texts discovered in the Hittite country, it is clear that it is no mere theory with which we have to deal, but with records as real and as important as those whereby the Egyptians, the Akkadians, the Medes, the Babylonians, Assyrians, Etruscans, Persians, Greeks, and Phœnicians are already more or less well known to us all.

And first as regards race, it is a well known fact that the ancient sculptors of Asia and of Egypt carefully distinguished the various peculiarities of race in their pictures. In Egypt side by side with the various Egyptian types we find the black negro, the hook-nosed Semitic people, and the yellow peoples of the north represented. The Phœnician with shaven upper lip and long beard, the brown ancestor of the Arabs, are clearly distinguishable from other types; and at Tell Loh, by quite recent discoveries, a dark race, with fine features recalling the Abyssinian, has lately been brought to light, which is no doubt the same "dark people" mentioned in one of the oldest cuneiform records. I understand that the question of obtaining good reproductions of these various types is already under consideration, and no doubt interesting papers on this subject may be shortly expected; but in the meanwhile I may say that the differences of type are already so well known and are so marked that we have sufficient evidence in the pictures of Rosellini, Sir Gardner Wilkinson, Brugsch, and others to enable us to draw very definite conclusions.

On the walls of the great temple of Karnak the Hittites of Kadesh are represented warring against Rameses II. Two races have combined their forces and are easily distinguished in these pictures. The one is a dark or brown race, bearded, and resembling the ordinary Semitic type. This no doubt is the population which accounts for the Semitic nomenclature of Palestine before the Hebrew conquest, which is to be recovered in the long list of towns conquered by Thothmes III in Palestine. Kadesh, the great city where the battle against Rameses II was fought had itself a Semitic name, and no fact is better established than the existence in Palestine as early as 1600 B.C. of a people speaking a language akin to Hebrew.

But side by side with this population, the ruling class as represented in the chariots which are rushing towards the Egyptian army, or fleeing before the Pharaoh, there are warriors and drivers of another type. They have a lighter complexion. They have black hair and eyes, but no beards. Their moustaches are long and their heads are more or less shaven, and they have real pigtails like the Chinese. I well remember Dr. Birch five years ago in the British Museum bringing out for me the plates in Rosellini and saying, "Look at the Hittites, are they not just

like Mongols or Chinese?" It was then a new idea to me, but if we reflect on the relations of race still notable in travelling through Palestine and Northern Syria, it seems to me that we perhaps begin to understand Hebrew history better. The war against the Canaanites may have been only part of the constantly recurring struggle still going on in Syria between the Semitic and the Turanian peoples; the race hatred between Israel and Canaan becomes identified with that antipathy which has always existed between these two peoples, who nevertheless have lived together since the dawn of history and have mutually influenced and civilised one another.

The evidence of physiognomy seemed, I would submit, sufficient ground for an inquiry into the relationship which the Hittites, if a Turanian people, must have borne to other Turanian populations in the west of Asia. Now in studying such a subject it is absolutely necessary to begin by accepting what has been laid down by competent authority. I do not claim to have any opinion as to the true home of the Turanian race, or as to the relationships between north and south Turanian languages. Max Müller enumerates more than 100 such languages spoken in Asia, of which more than half are grouped as South Turanian, including the Indian, Malay, and Himalaic groups. He regards this great number of tongues which (as compared with eight Semitic and some forty Aryan tongues) represent a large majority of Asiatic languages as being all more or less remotely linked to that most archaic form of Asiatic speech—the oldest Chinese. According to the generally received theory the majority of North Turanian tongues are grouped together as Ugro-Altaic, on the supposition that the home of the race was in the Altai Mountains north-west of China, and that the Turanians of Western Asia migrated thence. The Finnic tribes, among whom are reckoned four great families, are those which seem to have penetrated furthest west. Their families are—1st, the Ugric, including Hungarians, Voguls, and Ostiaks; 2nd, the Bulgaric, who advanced from the Asiatic Bulgaria to the country now so called; 3rdly, the Permic; and 4thly, the Chudic, including Lapps, Finns, and Esthonians. Of these Finnic peoples the Hungarians and the Finns are the most civilised; and the Kalevala is a native epic which has been called the Turanian Iliad, and which, to the student of Asiatic mythology, is of the greatest possible value.

Next to these Finnic peoples the Turkic tribes have to be considered. From the Oxus they pushed gradually westwards into Asia Minor and Mesopotamia. The Turks, Turkomans, and Siberians, the races of Anatolia and Roumelia, the inhabitants of the Crimea, are classed by Max Müller as Turkic, and the

modern Turkish language, with its wonderful grammar and its vocabulary full of Arabic, Persian, and other foreign words, represents the results of centuries of foreign influence on the hardy horsemen of Central Asia.

The eastern groups—the Mongols and the Tunguse peoples near China need not arrest our attention. It is with the migrants who went west that we have evidently to do, not so much with those who went east or south towards China and India.

Now among the great discoveries of the cuneiform scholars none is more wonderful than that of a Turanian population existing long before 2000 B.C. in Mesopotamia. The ancient Akkadian language is thought to have become a dead language about 1500 B.C. The language of the common people of Media, known by the inscriptions of the Achæmenidæ after the fall of Babylon, has been closely studied by Lenormant, and he says it is found to approach both in its grammar and in its vocabulary to the Akkadian—this is the so-called Proto-Medic; further south the Susian language, though its grammar differs, yet retains many of the old noun and verb roots of Akkadian quite in a recognisable form; and is said, indeed, to be nearer Akkadian than is the Proto-Medic. There are other dialects called Cassite and Sumerian, distinguished, yet akin to Akkadian, and Akkadian being some 2,000 years older than Proto-Medic, being in fact the oldest known Turanian language of Western Asia, has even been called the Sanskrit of Turanian tongues.

The investigation of Akkadian has led to just the results which might naturally be expected. It is found to differ in structure from any modern Altaic tongue, but to be nearest to the Finnic languages or more probably to the Turkic. The Finns call themselves Suoma-lainen, or "fen dwellers," a word which the great French scholar Lenormant compares with the name Sumerian, which was proper to the inhabitants of the lowlands near the Euphrates and the Tigris, as distinguished from the Akkadians or "highlanders." Whether the Finns came westwards or pushed northwards practically they are the same original people, we may say, as the old Altaic race of Chaldea. Finnic and Turkic languages supply a key to the Akkadian cuneiform like that supplied by Coptic for Egyptian.

Another scholar working without any reference to the Akkadians in the first instance has demonstrated the fact that the ancient Etruscan race in Italy was also Altaic and that the Etruscan language is akin to the Finnic languages. This student was Dr. Isaac Taylor, and on comparing his Etruscan vocabulary with Akkadian I found many words which are the

same, including nearly every word which he had been able to fix by comparison with Finnic languages.

But yet more, although Basque is not grouped as an Altaic language but with Esquimaux as an "incorporating tongue," that is to say, one perhaps more primitive than the Finnic, still Lenormant has shown that the vocabulary and the grammar of the Basque both shew a connection with Akkadian. Even in Egypt, though the language is distinct, a certain number of loan words are said to have been discovered which are identical with Finnic words. These separate studies by distinguished students serve then to connect more or less the Finns, the Basques, the ancient Etruscans (and to a certain degree even the Egyptians) with the old Turanian populations of Mesopotamia.

Tracing back from Etruria or west from Media, we shall find it possible perhaps to fill up the gap also in Asia Minor. The Etruscans are said to have been related to the Carians, Lycians, and Lydians; and Lenormant long ago stated as a fact that all across what is now Anatolia an ancient Turanian population existed akin to the Akkadians. The Carian and Lycian mercenaries found their way to Egypt, and the evidence of palæography seems to show that the same population may have existed in Cyprus. The Etruscans were a sturdy, big-headed people, with eyes oblique like the Chinese, black hair, high cheek bones, squat figures, and without beard or moustache. If we go to Cappadocia and look at the monuments cut on the rocks we find exactly the same type—the sturdy figure, short nose, and hairless mouth. This type of race recalls that of the Mongols in later times as described by travellers, and it is as much contrasted as possible with the Semitic type.

Seeing then that the Hittites were shut in on all sides by Turanian tribes, said to be akin to the Akkadians, and remembering their own Mongolian appearance, we might be justified in supposing that they belonged to the same race. In Akkadian and Etruscan and Proto-Medic we have ancient languages, which we may perhaps compare with that spoken by the Hittites.

A curious peculiarity of dress also serves to indicate the same general connection. In Cappadocia and in Anatolia the monuments represent figures with a boot or shoe curled up in front. An Assyrian representation of an Armenian merchant shows the same boot. Prof. Sayce has called it a snow-shoe, but I think Sir C. Wilson first compared it with the boot now worn by the peasantry of Asia Minor. Perrot compares it with the cavalry boot worn in Syria, and with what we call a Turkish slipper. I find also that the Etruscans wore a similar shoe called *Calceus Repandus* by the Romans. On the monuments

at Karnak the Hittites are represented wearing the same shoe, and although it is not of necessity a mark of race, it is still curious that this curly-toed boot was common to the various Turanian peoples of Syria, Asia Minor, Armenia, and Italy.

But as regards the language it may be asked: How do we know monumentally what language the Hittites spoke? We may know from the names of their kings, and from the names of towns in the Hittite country, as recorded by the scribes of Rameses II and of Thothmes III. The topographical lists are about as old as 1600 B.C., and the lists of kings about as old as 1340 B.C. The scholars who have written on this subject, from Chabas downwards, have agreed in saying that the names of the Hittite kings are not Semitic, and not Aryan, and that they must either be Turanian, or belong to that class of languages of the Caucasus, which has been called Alarodian. In a list of twenty-five royal names, we find the words Tar, Sar, Nazi, Lar, and others repeated as personal names. These are not new or unknown words at all. They occur in the languages already noticed. Unless some new reading is pronounced to be correct in cuneiform we have Tar, Sar, Nazi, occurring in personal names in Akkadian and in Proto-Medic; and in Susian also Nazi occurs. Lar is a very familar Etruscan word for a chief, and I venture to compare it with *lul* and *rar* for chief, enumerated as Akkadian words in Prof. Sayce's "Assyrian Grammar." There are many similar cases in the name list in question, and although such evidence is, of course, not sufficient to show that the Hittites talked Akkadian, it seems to me strongly to favour the view that they gave to their kings titles which can be shown to be common words meaning "king," "chief," or "prince," traceable through very many Altaic languages or dialects.

The topographical name lists are not only earlier, but they are more valuable, because they include no less than 200 names. They are, however, very difficult to study for several reasons. Mariette, Maspero, and other scholars have given much attention to these lists, which occur in hieroglyphic writing at Karnak. It appears to be generally recognised—and I believe Lenormant held the same view—that the names in question are in some cases Semitic, and in other cases—probably in the majority—non-Semitic. The first difficulty then is to distinguish between these two classes of names. Kadesh, for instance, the Hittite southern capital, had an evidently Semitic name; but Carchemish, their northern capital, had a name which is not Semitic, according to general opinion. In addition to this difficulty there is the difficulty of correctly deciphering the hieroglyphic signs. There is not a complete agreement apparently on this point. What some scholars have taken as a

determinative, others have read as a syllable, and the characters on the walls of the Karnak Temple—some of which are quite obliterated—have been differently represented.

But even with all these drawbacks, there remains a great deal that is certainly known and generally agreed to concerning these town names, and I believe it is recognised that next to the study of the names for numbers, for relationships, and for very common objects, the geographical names of a country afford some of the most valuable possible evidence concerning the race which gave those names. The lists in question I have studied geographically for ten years, and a great many suggestions as to the probable sites, in the south especially, which I ventured to put forward in 1876, I find to have been accepted by M. Maspero, and by Rev. H. G. Tomkins, who has devoted much labour to this question, and appears to have fixed many of the sites in northern Syria and Asia Minor. Going over these lists again and again with the hieroglyphics before me and with the aid of the papers by M. Maspero, Mr. Tomkins, and Prof. Sayce, it has seemed to me more and more clear that the sounds in a great many cases are the same to which I find a geographical meaning attached in the glossaries of Akkadian prepared by Lenormant, by Delitszch, and by others.

I am, of course, aware that the study of Akkadian is so rapidly advancing, that sounds which occur in all the books written some years ago may now be considered incorrect by the accepted authorities. It is also certain that as a great many of these sounds are common to all the various Finnic and Turkic languages, they would not serve to do more than to establish generally an Altaic connection. But even this would be a great gain, and I think that by using the works of Donner, of Castren, and of Vambery, on which Lenormant used to rely in fixing the pronounciation of Akkadian words, it ought at least to be possible to arrive through these lists at a general idea of the language spoken in the Hittite country between 1600 and 1300 B.C. If we take, for instance, the word *Ma*, which Lenormant and F. Delitszch, in their Akkadian glossaries, have stated to be an Akkadian word for country, and which Dr. Taylor believes can be recognised in Etruscan, we find that it exists as the word for country in all the Finnic languages. Thus, even if scholars are convinced that in Akkadian it ought to to be read as *Mat*, and in Proto-Medic as *Murun*—words which were known to Lenormant—it still appears probable that it must be a very old Altaic word, because it is common to so many Altaic languages. It would, therefore, be a very valuable word to recognise in Hittite nomenclature, if it can be shown that in Hittite it had the same meaning. I venture to

say that if these valuable geographical lists are studied on this principle, it will become possible to show in a convincing manner that the Hittite language was akin to the languages of Mesopotamia and of Media, at least in possessing these simple roots which are traceable, hardly changing, in existing Altaic tongues.

The personal and geographical names also give some evidence —as has been shewn by Prof. Sayce—of the grammar of the language. The genitive appears, at least in many cases, to precede the nominative, which would not be possible in a Semitic language, but which is often found to be the order used in Altaic speech. This does not appear, however, to have been an invariable rule in Hittite, if we are to acknowledge the celebrated boss of Tarkondemos as Hittite. On that boss the genitive appears to follow the nominative, according to Prof. Sayce's arrangement of the symbols, the order being the same found in Akkadian; as, for instance, in the tablet of Singasid as read by Mr. Pinches. In the Proto-Medic languages, according to Lenormant, the genitive may either precede or may follow the nominative—possibly then, from the evidence above mentioned, the same may have been the case also in the Hittite. There is not, indeed, any evidence that the Hittites spoke Akkadian, but I venture to think that there is considerable *prima facie* evidence in favour of their language having affinities at least to that ancient tongue, evidence quite sufficient to justify further research on such a supposition.

The third branch of enquiry is that which concerns the religion of the Hittites, and concerning this we may gather a great deal of valuable information, both from the Egyptian records, from the name lists already noticed, and from sculptures and gems more or less clearly connected with the Hittite race. In the famous treaty with Rameses II, the Hittites invoked the gods, and especially one called Sutekh, with the rivers, the mountains, and the clouds, the winds, and the sea. No less than a "thousand gods" are said to have existed in the Hittite country; and this I suppose may be taken to indicate an animistic belief like that which gave a nymph to every stream, a dryad to every tree, a god to every great mountain, among the Greeks. This belief in numerous spirits, good and bad, in beneficent deities of the sun, the moon, the ocean, and the rivers, also clearly existed among the ancient Turanian populations of Media and of Mesopotamia. As regards Sutekh or Sut (for Chabas has given reasons for supposing that the name occurs in both forms), he has been generally supposed to be the same as the god Sut or Set, who from an early period was worshipped also in Egypt. His name does not appear as yet to have been

found among those of gods invoked by the Akkadians, though Lenormant mentions as possible a connection with a god called Shita among the Assyrians. In Phœnicia, close to the Hittite country, several gods, originally Akkadian, appear to have been adored until quite late historic times. Adonis has been said to be the same as Tammuz, originally an Akkadian god; and Nergal is perhaps another instance. He was represented with a lion's head, and his portrait occurs on a bas relief, discovered on the Phœnician coast, while his name is known in connection with a Phœnician settler in Greece. Nergal, however, was also adored by the Semitic race of Mesopotamia. Quite lately in Anatolia the same lion-headed god has been found represented, but the bas relief bears no inscription, except a possible hieroglyph above the head, which represents a long-eared animal, perhaps a hare or an ass.

The representation of deities at Boghaz Keui, in Cappadocia, may also throw light on Hittite religion. Prof. Sayce considers that the Hittites were a Cappadocian people; and, as already noted, the sturdy figures, the hairless faces, and the shoes, serve to connect these figures both with the Hittites, and also with the Etruscans.

It has been doubted whether all the figures at Boghaz Keui are to be considered to represent gods, although the invocation of a "thousand gods" by the Hittites shows that there is no impossibility in their having represented a great number of deities in one picture. The winged figures at least, both in Cappadocia and also at Carchemish, can hardly be meant for anything but divine persons; and I think the same will be admitted concerning the figures standing erect on the backs of lions. In Phœnicia and on Greek Asiatic coins gods are so represented, and in Hindu mythology every deity has his appropriate *Vehan*, or animal, on which he stands.

At Boghaz Keui the winged sun is sculptured above one of the chief figures. At Eyuk we have rude representations of sphinxes, recalling not only the Egyptian sphinx, but also similar monsters on seals from Mesopotamia, or represented in Etruria, where the scarabeus was as much a sacred emblem as in Phœnicia or in Egypt. At Ibreez there is a gigantic figure, supposed to represent a god, which has a horned head-dress, like that which the water-god Ea wears on seals, said to be Babylonian or Akkadian. This giant in curly-toed shoes and a short tunic, like that of the Cappadocian gods, holds in one hand a vine, in the other a long stalk of corn-ears. He clearly represents a god of corn and wine, and over his head occurs an inscription in what is now known as Hittite writing. In this case curiously enough both the god and the king or priest, who

approaches him, wear beards in the Phœnician or Greek fashion, whereas the Cappadocian figures are beardless. The general evidence of the monuments and records, seems clearly to show that the Hittite religion must have been of the same character as that of the Egyptians, Etruscans, and Akkadians, consisting in the personification of natural powers: the sun and moon, the ocean, the earth, with genii of the rivers and mountains, the winds and clouds. There does not seem, as far as I can gather, any evidence of their having worshipped seven planets, nor are the stars and planets invoked in the treaty—these were the gods of the Semitic rather than of the Turanian peoples of Western Asia.

The female figures of the monuments are very interesting. The two principal types as found at Carchemish and at Merash, represent, the one a naked goddess with her hands supporting her breasts, the other a mother goddess with a child on her knees. Both these figures are widely found all over Asia. At Carchemish, the naked goddess has wings. At Troy, and recently in Mesopotamia, this figure occurs. I have seen a pottery representation of the same goddess in the same attitude found at Gezer in Philistia, and the figure is common in Phœnicia and in Cyprus. A Hindu goddess is represented in the same attitude, pressing streams of milk from her breasts to nourish creation.

The group of the mother and child is equally widely spread. In India, Krishna and Devaki; in Babylonia, the mother goddess Nana; in Egypt, Isis with the infant Horus; in Italy, Lucina with her child, represent the same group, which Lenormant traces in many other cases. The Merash representation is extremely rude, but it shews that the same mother goddess and child were also worshipped in the Hittite country. So far then the evidence of the sculptures shews nothing very distinctive in Hittite religion, although the absence of the stars and planets from the enumeration of their thousand gods seems to shew their non-Semitic race.

The monuments naturally tell us less of the demonology than of the worship of the Hittites, yet even on this question some light is thrown. The belief in innumerable demons, common to all Asiatics, was a prominent feature in the religion of Akkadians and Etruscans. A cylinder found in Lydia, at Aidin, shews in the centre a two-headed god. In his right hand he holds a cross towards three worshippers; in his left, what looks like a whip towards two representations of demons who are fighting each other, with two hieroglyphics above them. In the Akkadian magical texts we have many occurrences of this idea. The charms of the priests were supposed to breed discord be-

tween the demons, who were thus unable to unite their forces against mankind. There are several other curious figures on this cylinder, one being that of a god seated on a mountain and flanked by human figures with eagle's heads. Under his feet is a deer which seems to be his emblem. This, perhaps, connects him with Dara ("the deer") one of the names of the Akkadian god Ea, possibly connected with the Esthonian and Etruscan word Tara, for "God," and thus with the deity called Tar, in Asia Minor.

On a very remarkable bronze plaque from Palmyra, the two demons tearing each other are again represented; and in Etruria we have representations of good spirits painted red, and demons coloured black.

If it be granted on these various grounds of physiognomical, religious, and linguistic connection that the Hittites were a Turanian and probably an Altaic race—and these suppositions I have not seen seriously controverted of late by any who have given special attention to the subject, we are able to form some idea of the probable customs of the race in remarkable and distinctive peculiarities, concerning birth, marriage, death, dress, war, and the arts and manufactures. The records and the monuments both throw light, more or less, on all these questions.

The social manners of the Turanians are very astonishing in our eyes. The extraordinary custom of the Couvade appears to have originated among them. We hear nothing of it among Semitic people, but it existed among the Basques; Strabo mentions it among the Iberians; and Marco Polo found it in China. It has been traced by Tylor and by Colonel Yule in many other countries. According to this custom, no sooner was a child born than the father was obliged to go to his bed, and was fed on special diet, apparently from some dim idea that any illness due to over-exertion or exposure of the father would also affect the infant. We do not, indeed, know of this custom among the Akkadians or the Hittites; but it certainly prevailed among some Altaic peoples. Apollonius Rhodius (as quoted by Colonel Yule) refers to the Couvade among the Tibareni in Pontus.

The marriage customs of the early Turanians were equally curious. Dr. Taylor gives some evidence in favour of the supposition that the Etruscans traced descent in the female line, not in the male; which also was the custom of the population (probably non-Semitic) of the south of Arabia in Strabo's time. This custom is closely connected with the practices of exogamy and of polyandry among Turanian peoples. According to the polyandrous custom, a woman was recognised as having two,

three, or more husbands—as is still the practice of many tribes in India, and further north. Exogamy, as Dr. Taylor points out, was probably connected with polyandry, since the only way by which a man could obtain exclusive right to a wife among polyandrous tribes was by purchasing or capturing one from another tribe. The Etruscans appear to have been exogamous, and the Hittites, according to the Bible, married out of their own tribe—at least in the case of the women.

As regards the disposal of the dead, it is certain that many at least of the Turanian peoples used to burn instead of burying. The Semitic people seem, historically, to have been always a burying people. The custom of burning the dead, which can be traced from Britain on the west to China on the east, was originally the usual practice among all the Finnic peoples. The late George Smith was, I believe, the first to point out that the Akkadians were probably a people who did not bury, but burned the dead. Dr. Taylor is of opinion that the earlier Etruscans burned the dead, and only buried in later times. The Aryan tribes seem to have had both practices; the later Medes and Persians had the yet more extraordinary custom of exposing the dead to be eaten by dogs and birds, as Herodotus states, and as we find from the Zendavesta to have been inculcated in the Zoroastrian creed. If the Hittites resembled the Akkadians or the Etruscans, it would seem, therefore, most probable that they were a burning people, and we should hardly expect to find tombs like those of the Phœnicians, or mummies like the Egyptian mummies, or even tumuli such as those in which some British, Greek, and Scythian tribes interred the corpses of their chiefs.

I should note that an interesting paper on the subject of such burning of the dead among the Akkadians has lately been published by M. Bertin, who has given strong confirmatory evidence of the practice from cuneiform records.

It would be, perhaps, not prudent to inquire if the Hittites drank Koumis, or fermented mare's milk, but of the antiquity of that custom among Turanians, we have evidence in Herodotus. The Hittites were, at least, a great horse-breeding people, and used numerous chariots in time of war. Mr. Houghton believes that Media and Armenia are the home of the horse, and the Kurdish and Turkoman horsemen are still famous. In Syria, a great number of horses are still imported from this same part of Asia.

From the monuments we obtain clear indications of the Hittite arms and armour. They used the bow, the spear, the javelin, the double-headed celt or axe. They had short, broad swords like that still in use among the wilder Arabs. The

figures in some cases have what may be taken for a whip, like the modern kourbach, in their hands. A square buckler is represented covering one of the chiefs in his war chariot. The quiver was, no doubt, slung at the chariot side as among Egyptians and Assyrians. In addition to these weapons a short club with a round head is often represented—a kind of sceptre, perhaps, and not unlike the *dabbûs* club still carried by the peasantry of Palestine. The sceptres borne by the gods at Boghaz Keui, are sometimes surmounted by a globe, in other cases they seem to be intended to represent flowering rods like that which occurs in the hand of one of the great figures in the British Museum.

The most distinctive peculiarities of dress among the tribes under consideration, are, the high cap, or tiara, which resembles very closely that worn by Moslem dervishes in our own times; the curly-toed boots or shoes already mentioned, and found to distinguish the Hittites on the bas reliefs of Karnak; and the short tunics of the male figures. The goddesses wear long dresses represented with many vertical folds, and a high bonnet, which is very much like that of the Bethlehem peasant women. A round skull-cap and an ample cloak are also found on some male figures.

As regards the political constitution of the Hittite tribes, and their laws and civilisation, something may be gathered from both Egyptian and Assyrian sources. Thus it appears that there were numerous chiefs in different parts of the country, but how far these were independent or acknowledged one "great king" seems to be matter for further inquiry. Thus much we know that a great federation was arranged in face of Egyptian aggression, and that Rameses and his predecessors apparently recognised the ruler of Kadesh as the principal Hittite king. It seems probable that as among other Orientals the actual political situation depended on the personality of the ruler, and that the combinations were continually altering, as among Arabs, Kaffirs, Afghans, or any other wild and disunited peoples. The celebrated treaty between Kheta-Sar and Rameses, which was engraved on a silver plate, recognises various grades of society. The Hittites had chiefs and slaves, but also skilled workmen, whose labours were in request in Egypt, and they admitted Egyptian craftsmen into their country. In fact, the extended trade relations between Mesopotamia, Syria, Phœnicia, and Egypt, which can be traced back earlier that 1600 B.C., give us an idea of the civilisation of the west of Asia, which would hardly be suspected if we confined our attention to records of fleeting conquests which constitute the political history of the time.

As regards architecture, we have a representation of the city of Kadesh, which shews that in the 14th century B.C., the Hittites must have advanced far in this art. A town with high walls and numerous towers is represented from which the bowmen discharge their arrows. A double moat surrounds it, and bridges or causeways lead over the water. To the present day there are remains of this moat surrounding the great mound at the ruin of Kades, which I proposed, in 1881, to identify with the Hittite capital—an identification which I now find to be very generally accepted, since it has survived the criticism levelled against it. We do not know much as yet about Hittite temples; and the representations of the gods are often cut only on rocks beside rivers; but I believe that at Ibreez one of the hieroglyphic signs may be taken to represent an oblong building with an inner enclosure or shrine resembling the form of temple known among the Akkadians and Egyptians, and also among the Hebrews from Solomon to Herod, as well as among the Greeks. The high mounds on which the Hittite towns stood—like the cities of Mesopotamia and of Palestine—were apparently faced with stone, forming terraces; and the supporting slabs were sculptured with various designs. In one instance in Asia Minor the chase of the stag, and of the hind, by a bowman, is so represented with a winged, ramping gryphon. In another case the lion-headed god occurs, holding a fawn or a hare in one hand, and a sword in the other—the same figure already known in Phœnicia, and also in Cappadocia. Perhaps, however, the most distinctive of the Hittite and Cappadocian figures is the doubled headed eagle found at Boghaz Keui and at Eyuk, which has been pointed out to be an Altaic symbol used in the middle ages by the Seljuks, and also adopted by the Franks, so that to our own times it survives in the arms of the Austrian and Russian emperors. It appears fairly certain that the walls and entrances of the Hittite temples and palaces must have been adorned with bas reliefs and hieroglyphic inscriptions, just as statues of the gods flanked the doors of Assyrian and of Akkadian buildings, or covered the pylons of Egyptian temples. At Merash, a lion covered with hieroglyphics in front and on the left flank was evidently intended as a corner stone, and one of the Hamath stones inscribed at one end and on one side was in like manner intended for a corner position.

That the Hittites possessed the art of writing is thought to be shewn by the mention of a Hittite scribe in an Egyptian record; and it is generally agreed that the hieroglyphic texts found at Hamath and at Carchemish represent the script employed.

It is also now generally agreed that the syllabic sounds of what has been called the Asianic syllabary stand to these

hieroglyphics in the relation of the hieratic to the hieroglyphic in Egypt, so that from the known sounds of this syllabary as deciphered in Cyprus, in Caria, in Syria, and in Egypt it may be possible to recover one sound at least which attached to the corresponding original Hittite ideogram of the monuments.

As regards the data of these hieroglyphic texts there appears to be some doubt. Some authorities regard them as belonging to the latest times of Hittite rule but since in various cases we find the emblems to be much more or much less conventionalised it seems clear that a long period of time must have elapsed during which they were constantly in use. Thus the inscribed bowl discovered in Babylon bears figures much more like those of the syllabaries than are any found on the bas reliefs of Carchemish and of Hamath. The monuments on which the emblems are in relief must be considered probably to be older than those where the figures are cut in. In Egypt the oldest hieroglyphics in the Boulak Musæum are in bold relief, but by the time of Rameses II they appear to have been in intaglio. The syllabaries went out of use apparently about the time of the Greek conquest of Asia under Alexander the Great, and the hieroglyphic must be much older than the derived syllabic signs.

There is at least one case where we may obtain some idea of the date of a hieroglyphic text of the same general character with those of the Hittites, viz., on the statue of Niobe on Mount Sipylus. Here we have the older emblems in relief and the cartouche of Rameses II cut in on the field of the bas relief. It seems clear that the cartouche is therefore later than the original work and the native hieroglyphics in this case appear consequently to be older than 1340 B.C. It appears to me that without any improbability we may therefore assign the Hamath and Carchemish stones to the best period of Hittite civilisation, when the Hittites were recognised by the Egyptians as a great civilised power, and when we know them to have already possessed scribes attached to their kings.

Now it will not I think be disputed that the existence of a hieroglyphic script among these peoples agrees with the agglutinative character of their language. This appears to be an invariable rule. The character and the speech go together, and as the speech develops so does the script become more conventional. The earliest attempt at recording human events or human hopes took the form of picture writing, like that of European Cave-men or of North American Indians, or of the Bushmen, whose pictures cover the rocks in South Africa. The hieroglyph is only a step beyond the pure picture, just as the earliest agglutinative language is only a step beyond the mono-

syllabic stage, when as yet grammar has hardly any existence. As the idea of the male became the abstraction of the personal pronoun, so did the hieroglyphic representing the male become also the sign for "he;" and, as in Chinese, the noun for "interior" became the locative sign, so did every other grammatical sign develop from a root once a noun or a verb. This is laid down by so many great authorities as to serve for a safe basis in considering ancient written systems. When language advances to the inflexional stage the hieroglyphic becomes unsuitable to express the sounds, and the syllabary becomes a necessity. To carry the comparison yet further, the most perfectly inflected languages, the small Semitic group, belong exactly to those people who first employed the most abstract of human methods of recording sounds by inventing, or rather by developing, the Phœnician alphabet, whence in turn all the alphabets of Asia and of Europe have grown up.

There is, therefore, good reason to suppose that a simple, almost pictorial system must belong to a simple and early agglutinative language. We know of Semitic peoples who used syllabaries, as did Aryan races, but the hieroglyphic system of Egypt belong to a language of much more primitive character. The fact that the Hittites used hieroglyphs, the majority of which are unmistakeable pictures of natural objects, or of manufactured objects, though interspersed with other signs which appear already to have become conventionalised, agrees well with the supposition that their language was a simple agglutinative tongue like that of the Etruscans.

It has been shown by Lenormant, and by other writers, that the various known dialects of Mesopotamia, Media, and Elam, though differing considerably from each other, and belonging to very different historic periods, yet have in common much, both in structure and in vocabulary, which connects them to each other, and also connects them with living Altaic tongues. The same has been found as before said to be the case with Etruscan, which is connected on the one hand with Akkadian, and on the other with Finnic dialects. The Akkadian is far the oldest of these languages of the western Turanians. It is said by scholars to have become extinct in Chaldea in 1500 B.C., although it may have survived longer in parts more remote from the advancing tide of south Semitic immigration. Lenormant in Akkadian, Prof. Isaac Taylor in Etruscan, have shown how the monosyllabic roots recognised in those languages may be traced with but slight variation through a number of Finnic and Turkic languages of our own times. These roots are acknowledged to be the oldest elements of Turanian speech, and although we have not as yet (as in Aryan tongues) a Grimm's law laid down

to rule the variations of sound, still there appears to be in Altaic speech a less degree of variation than in Aryan languages.

Now as already noticed the occurrence of the words Tar, Sar, Nazi, &c., in the names of Hittite kings leads naturally to the inquiry whether other such simple roots, common to various ancient and modern Altaic tongues may not also be discoverable in Hittite inscriptions. The syllabaries derived from the hieroglyphs give us the means of obtaining sounds, and these sounds may be compared both with Akkadian sounds, and also with sounds in living speech.

As regards the cuneiform sounds the question is extremely difficult because the progress of cuneiform learning constantly leads to the proposal of new readings for the Akkadian emblems; but as regards living languages it is often possible to shew that an old monosyllabic root, known as an Akkadian sound, has survived unchanged in many Altaic languages. It appears for instance that *Ma* for country must be a very old word, and Lenormant may have been right in saying it was an Akkadian word as previously explained. I believe that on the celebrated Hittite bilingual the emblem for "country" can be shewn to have the value *Me* or *Ma* by aid of the Carian and Cypriote syllabaries, where this emblem—a double peaked mountain—has preserved such a phonetic value.

The recovery of these old monosyllabic sounds will of course only give us a vague general idea of Hittite language. It is on the grammar much more than on the vocabulary that the classification of the language must depend. This is stated by Max Müller and by others; and it is recognised by Lenormant and by many other scholars that the older tongues of Chaldea are distinguished from modern languages of the Altaic group by the structure of their grammar. I do not think it will prove that the Hittites spoke Akkadian. The long words and complicated sentences which scholars of Akkadian give in their glossaries and in their translations, represent a language where the incorporation of a great many syllables with the old noun and verb roots is recognised. The general arrangement of the emblems on the Hittite texts does not suggest quite such an elaborate system of incorporation, and the Etruscan epitaphs appear to indicate a simpler form of speech.

But it is nevertheless possible that the roots may be found in Akkadian and that the comparison with living languages may thus be justified, by shewing the possible antiquity of the words represented by the Cypriote syllables. In studying Hittite we have at least this remarkable advantage over the cuneiform that the pictorial meaning of the majority of the emblems is easily

recognised; thus serving as a check on the word supposed to be represented by the sound of the derived syllabic emblem. Of course each emblem may have had many names in Hittite, as each emblem in cuneiform also was connected with many sounds. If we see a king's head on a coin we may call it "monarch," "ruler," or "sovereign," but this does not disprove the existence of the old word "king," which, if independently proved to exist, may equally well be applied to the image. Thus the Hittite emblems were no doubt polyphones; but one out of many possible sounds, namely, a monosyllabic word, is preserved for us, probably by the syllabaries.

It appears to me that these are the principles on which we should study Hittite inscriptions. I will not attempt to defend my own tentative work in this direction. I am prepared to abandon anything that may be shewn untenable by competent authority in either words, grammar, or subject; but the first question appears to be the settlement of the principle on which to work. The Hittites have been thought by some to have been Semitic, and many attempts have been made to read these inscriptions as Semitic, and as either letters of the alphabet or letters and determinatives mingled. I think all such attempts must fail. We know already of 100 to 130 Hittite signs, a fact which indicates syllables rather than letters. Nor as far as I am aware have we any instance in which a real letter (as distinguished from a syllable) has ever been found in use in a system including true determinatives. The Hittite language has also been thought to have a possible connection with Georgian—a rude, inflexional language—but since Georgian has not as yet been shewn to throw any light on the bilingual, this connection can hardly as yet be considered to be demonstrated. The first important matter is to attain to an agreement as to the general principles on which the sounds and structure of the Hittite language are to be studied.

In concluding this general sketch of Hittite ethnology something may be said as to the arts of metallurgy and of engraving gems.

The Hittite chariots were plated with gold and silver, the treaty was engraved on a silver plate, the bilingual itself is on a silver boss. The use of the precious metals was not indeed peculiar to the race, since Akkadians, Phœnicians, prehistoric Greeks, and later Babylonians and Hebrews employed them in like manner to decorate houses and temples, and to adorn their persons; but the practice of metallurgy may, perhaps, also indicate a Turanian people coming from the mountains near the Caspian, where such ores were found. The Akkadians very early understood the art of alloying copper with tin.

Bronze vases were captured in Syria by Thothmes III, and the Etruscan bronzes are as well known as those of Phœnicia. The beautiful forms of the metal utensils brought to Thothmes III by the Syrians in tribute, shews an advanced state of art in Western Asia in 1600 B.C., and we may hope to recover in Asia Minor, and perhaps in Syria, more hieroglyphic texts, and perhaps the much needed bilingual (which alone can set every doubt at rest) preserved in bronze, or in more precious metal.

As regards the art of engraving gems, this also was common to Akkadians, Babylonians, Phœnicians, and probably Hittites. It seems to me often very difficult to feel certain as to the origin of seals, cylinders, and gems, which are confidently called Hittite, in cases where there are no hieroglyphic signs to indicate their derivation. Seals from Cappadocia and Lydia might, perhaps, in many cases, be attributed to Altaic tribes akin to Hittites; in other cases they may be of Semitic origin. The curly-toed boot, or the tiara, are not in themselves sufficient evidence to convince the world in general. But on the other hand important indications of religious belief, and in a few cases, even probable hieroglyphics, have already been brought to light by study of these seals; and it appears probable that yet more information may be obtained from the same sources.

I trust, then, that the present sketch of an interesting subject may be sufficient to shew, first, that the existence of Hittite archæological materials is no mere dream of the antiquary; and secondly, that there are strong reasons for regarding the Hittites as a Turanian people, and as akin to the Turanian races of Media, Asia Minor, Mesopotamia, and Italy.

Discussion.

Mr. Bertin said that Captain Conder's interesting and exhaustive paper raised too many questions to be done justice to in a few remarks. He had made a great step, but he must be careful not to accept too easily statements made by others without any sound ground, as, for instance, the existence of a black population in Susiana; the common customs and the similar religion of two peoples only show intercourse, and not necessarily racial relationship. One of the most important points brought out by Captain Conder, if ultimately proved, is the Turanian origin of the writers of these inscriptions. Mr. S. Poole had on a previous occasion shown that the invaders of Egypt, the Shepherds, were Turanian, and that their national god we know was *Set*; Captain Conder is believed to have found this same name among the *Hittite* gods (the name Hittites is still provisional); and as on the other hand the Assyrian sculptural monuments show in Syria a non-Semitic population by the side of the Semites, there is likeliness in the

possible Turanian origin of this so-called Hittite population. The Semites in the Jewish and Phœnician kingdoms may have composed perhaps a kind of aristocracy and have been in a minority. Mr. Bertin concluded his remarks by expressing the hope that Captain Conder would soon publish the inscriptions with the characters, his transcription and analysis.

Mr. Hyde Clarke congratulated the Institute on this subject having again been brought forward, for it was to the Institute that the Hamath sculptures were first made known by their colleague, Sir Richard Burton, and their character as inscriptions was determined by himself. Since then that identification had been generally admitted, and many had devoted themselves to the study. To their old colleague, the Rev. Dunbar Heath, much was owing for his ingenious establishment of the parallel passages. The members therefore welcomed Captain Conder, who had devoted himself zealously and ardently to the undertaking, and it was to be hoped he would ultimately achieve the same success as had attended him in so many years of research in Palestine. For himself it was a matter of gratification to find so much of his early labour accepted and established. Before the Hamath epoch until now he had for thirty years been engaged on the examination of the question of the earliest populations of Asia Minor, on which the journals of their two original societies, the Ethnological and the Anthropological, contained several papers by him. That these populations were Turanian was an early datum of his, and he had in connection examined the relations of the Georgian language as well as others. The inscriptions and the boss of Tarkondemos he had in company with Mr. Svoboda, the traveller and painter, then present, examined before it was known they belonged to the Hamath, or, as now called, Khîta, group. Through Mr. Svoboda he had obtained the first accurate delineation of the pseudo Sesostris, near Ninfi, and he had ascertained the existence on it of characters non-Egyptian, although M. Renan contested his decision. He had also published this in his edition of Murray's handbook. With regard to the term Hittite he considered it inappropriate and calculated to lead the public astray in an inquiry which embraced not only Canaan, but Asia Minor and Etruria, and even beyond. It was curious that there were Hittite names, as he had shewn in 1871, which admitted of a Georgian form. The ideographic form of Khîta as glossed by the boss was, however, different, and he could not concur with Captain Conder that Akkad was there to be applied. It was not impossible that Khîta inscriptions could be read in Akkad, for he concurred with M. Georges Perrot, a great discoverer of Khîta monuments, that the inscriptions could probably be read in some six or seven languages, and of these he had published forms. Captain Conder adopted a correct mode in proposing a careful comparison of the palæography and of the languages. To shew that the characters in Khîta were descended from original ideographs, he produced some diagrams showing the distribution of characters in identical

forms, so far off on one side as Western China, and on the other as Western Africa. He also exhibited diagrams of the boss of Tarkondemos, and of a corresponding form from Carchemish, and he stated that the first two characters, as deciphered by him, could readily be identified on the coins of Sardis and other places. Therefore the decipherment must be carried out as that which he had discovered of the corresponding languages. As far back as his first communication on the Hamath characters to this Society he had stated their resemblance to Cypriote, although in common with other characters; but he was not the author of the erroneous deduction now being made that the sounds of Cypriote and of the ideographic Khîta were consequently the same.

Captain CONDER said that with regard to the points mentioned by Mr. Bertin and Mr. Hyde Clarke, he had only a few words to say. As to the dark race, supposed to be recognised at Tell Loh, their existence or non-existence did not affect his subject, since he believed the Hittite to be an Altaic people. He was very glad to find that Mr. Bertin saw no objection to such a supposition. With respect to the position of women among the Akkadians, he was entirely of Mr. Bertin's opinion. It appeared to him that the position of women must always have been lowest when the race was least civilised, and that as the weaker sex woman is most honoured by the most cultivated people.

As regarded his proposed reading of the inscriptions, he wished it to be understood that the work was purely tentative, and put forward with the view of collecting the opinions of those who know best. He had as yet seen no reason to withdraw from any of his views, either as to general construction, or as to the subject of the texts; although he had no doubt that many of the details would require reconsideration. His desire was to demonstrate the existence of the simple roots, recoverable through the Cypriote, by means of comparative study of existing Altaic languages.

With respect to Georgian it was quite possible that some aid might be obtained from that language if it were the case (as Prof. Hommel states) that it had affinities to the Proto-Medic, since Proto-Medic is an acknowledged Altaic language and allied to Akkadian. This Georgian had not, however, been found to throw any light on the bilingual, nor had any Georgian words as yet been compared with Hittite words; whereas at least 45 words in the geographical and royal lists, noticed in his paper, may be compared with Akkadian, Proto-Medic, Susian, and Etruscan words, as well as with Finnish, Ostiak, Vogul, Turkish, and with some Tatar or Mongolian words, and even in a few cases with Chinese. The parent language from which the older Akkadian, Sumerian, and Cassite, and the later Median and Susian dialects developed, would, he confidently expected, be found to be that from which the Etruscan and the Hittite and Asia Minor Altaic dialects also sprang; and he also felt confident that, not only the texts from Cappadocia and from Ibreez, but also those from Hamath and from

Carchemish, would be found to be religious, or rather magical, and not historical.

Postscript.

The following notes should be added to the paper:—1. The two-headed eagle mentioned in Cappadocia, &c., was also an Etruscan emblem. 2. The two-headed deity of Asia Minor and Egypt is to be compared with the Janus or Janis of the Etruscans. 3. The demon heads of the Jerablus text may be compared with representations of the Etruscan Charun, and with the Etruscan Gorgonian heads with protruding tongues. The same head occurs in Sicily, in Egypt, in Phœnicia, and in India, representing gods of death and of the infernal region. 4. The cup held by the goddess at Merash may be compared not only with the vase of Isis, but also with the cup held by Istar in Assyrian sculpture. Mr. Bertin connects the cup or bowl with the cuneiform emblem for the word *tin* ("life"), and there is no doubt that it is a widely-spread female emblem all over Asia.

Since reading this paper the author has continued his study by aid of living languages and has compared 800 Akkadian and 200 Median words with Tatar roots. He has traced some 200 Egyptian words to a Tatar origin and has compared nearly every Cypriote syllable with its Hittite original. He has also compared 60 Hittite and Archaic cuneiform signs, and about 40 Egyptian and Hittite, but finds evidence of a very early separation of these various systems. He also now believes the Phœnician alphabet to be clearly derived from the Hittite hieroglyphics. The Mongolian origin of the Hittites has also subsequently been accepted by Dr. Isaac Taylor and Prof. Sayce.

Mr. H. WALLACH exhibited some ancient Guancho skulls and other objects from his excavations in the Canary Islands, upon which he made some explanatory remarks.

The GUANCHOS.

By HENRY WALLACH, Esq.

DURING my recent stay at the Canary Islands, and in particular at Grand Canary, in the spring of 1887, I visited the abodes and ancient burial places of the Guanchos. I have climbed the mountain chains of Guayadeque (near Agimes), and explored, over precipices and rocks difficult of access, the sepulchres of that ancient and extinct race, where I excavated, amongst other finds, several skulls, three of which I have the honour to exhibit at the meeting of this Institute.

The skull which I have marked No. 3 is the skull (with lower jaw) of a man, in a perfect state of preservation, which demon-

strates the peculiarities and characteristics of this race in a marked manner. The orbits are large and rectangular, the forehead short and well developed, and the curve is the one peculiar to the type. It shows the flattening of the parieto-occipital region, is well developed, and the occipital shows a prominent projection.

The skull is very long and dolichocephalous.

No. 2 is the diseased skull of an old woman. The forehead represents the character peculiar to this sex. The orbits are rather low, rectangular, and very large. The skull, generally speaking, shows in a pronounced way the peculiarity owned by this sex and race.

No. 1, the skull of a young man, exhibits the intermixture with other races, and demonstrates the result of the influence of the Semitic emigration.

I have further brought before this Institute tanned skins and specimens of vegetable tissues, being parts of garments likewise found in the sepulchres of Guayadeque.

I particularly desire to mention that during my stay at Las Palmas, I had the good fortune to make the acquaintance of Dr. Verneau of the Paris Museum d'Histoire Naturel, an authority on the Guanchos, who resided there on a Government mission extending over a number of years, and I am greatly indebted to Dr. Verneau for having drawn my attention to this interesting branch of science. In the following notes I have tried to give, in a small compass, the most important anthropological, ethnographical, and historical outlines of the Guanchos. As far as I have been able, I have utilized the results of my researches made on the spot, and I have further made use of those of others. I take this opportunity to acknowledge the kindness shown to me by Dr. Verneau.

Under the name of Guanchos are designated the primitive inhabitants of the Canarian Archipelago, although it is said the first European conquerors gave to the population of each of these islands a different name.

There, as in many other archipelagoes, has been noticed a variation in language between one island and another; and also in the different districts of more considerable extent even habits, customs, and the physical type varied.

The Guanchos were the ancient inhabitants of Teneriffe, and had most probably spread to the other islands. But in Teneriffe, it seems that they preserved themselves pure up to the time of the conquest; and even the type survives to our day in some southern hamlets.

A second ethnic type, which recalls that of the Arabs, has been particularly recognised through the study of the skulls found at La Isleta, the small peninsula to the north of Grand

Canary. The neighbourhood of the African coast explains the presence of this element in the archipelago, which might have been introduced at the epoch of the extension of the Arab power in the north of Africa.

The Guancho type, in its craniological characteristics approaches to that of the ancient race of the Cro-Magnon.

As with the inhabitants of the lowlands of Vezère, the head is disharmonic. The skull is sub-dolichocephalous, very broad, the forehead low, and the prognathism never much accentuated.

A largely developed frontal sinus rises above the low and very large orbits, of rectangular aspect. The nose is straight, short, and thick, without being flat. In consequence of the great development of the bi-zygomatic diameter, and the sharp retreat of the maxilla part of the face, the cheek bones jut out very much.

The skull, generally speaking, is well proportioned, and its capacity is considerable. The parieto-occipital region is very much developed, and the occipital very often forms a pronounced projection. Other anatomical characteristics, resulting from the examination of the various parts of the skeleton render the opinion still more probable that the Guanchos resemble the race of the Cro-Magnon.

In fact with these islanders one meets with column-shaped thighbones, platycnemic tibiæ, the flattening of the shinbone on both surfaces, and perforated humeri[1] (46 per cent. in the Gulf of Risco de Petrigal, Tacaronte). On all the bones the muscular traces are very marked. In those places where the Arab element has taken root, and particularly with the people of La Isleta, the craniological and osteological characteristics are no longer the same.

As to the physical type of the Guanchos, according to the first historians of the conquest, they are described as a handsome race. They were rather tall, well-built, of athletic forms, and of a surprising agility. Their complexion was white and their hair light. The influence of the Arab emigration has been clearly proved by a partial alteration in certain islands. The women were handsome, and some of them have been specially mentioned as types of beauty. The Guanchos were a courageous, energetic, and warlike race, who for a long time struggled with tenacity against the European invaders before submitting to their domination.

What we know of their language leads us to believe that it

[1] A depression in the bone where the olecranic process is received, better known amongst inferior races.

was connected with the idiom of the Berbers of the north of Africa, but had borrowed some elements from the Arabic. Certain expressions and proper names of ancient chieftains, still borne by certain families, are all that is left of this Guancho language, in place of which that of the conquerors has been substituted.

In many islands of the archipelago there are engraved on certain rocks signs, which only during the last few years have attracted the attention of those who have interested themselves in the history of the Canary Islands.

Domingo Vandewalle, a military governor of Las Palmas, was the first who in 1752 took up the idea of copying these; and it is also due to the perseverance of D. Aquilino Padran, a curate of Las Palmas, that anything about the inscription of Hierro has been brought to light.

In 1878 Dr. Verneau, who copied certain signs in the mountain of Cuatro Puertas, Grand Canary, was lucky enough to discover in the same island some genuine Libyan inscriptions. Situated in the ravines of Las Balos, these characters had never before been noticed.

The inscriptions in the Canarian Archipelago often contain characters so much deteriorated that it is sometimes difficult to copy the same faithfully. It is, according to Dr. Verneau, incontestable that the Canarian inscriptions are Numidic.

In fact we find here nearly all the signs of the Numidic inscriptions of Algiers and Tunis, as collected by General Faidherbe. So far there has been no clue discovered to solve the mystery of these—for the present—dead witnesses of a language, the deciphering of which is left to a special study, apparently of insurmountable difficulty.

The conclusions drawn by Dr. Verneau from the examination of the inscriptions, seem to corroborate those to which the study of the physical and ethnographical characters has led us.

In two of the islands of the archipelago (Teneriffe and Gomera) the Guancho type has been retained with more purity than in the others.

No inscriptions have up to this day been met with in these two islands, and therefore we may conclude that the Guanchos did not know how to write.

In the other islands we have found numerous Semitic traces, and at the same time we find here signs engraved in the rocks.

From all these facts we draw the conclusion, that the Numides, travelling from the neighbourhood of Carthage, and intermixing with the dominant Semitic race, landed in the Canary Islands. These are they who have written the inscriptions at Hierro and Grand Canary.

The political and social institutions varied. In some parts, hereditary autocracy prevailed, whilst in others the government was elective. In certain islands polyandry was practised, in others monogamy only existed.

Almost all the Guanchos used to wear garments made of goat-skins and some of vegetable tissues, which have been found in the sepulchres of Grand Canary.

They had a taste for wearing ornaments, such as dangling finery and necklaces, consisting of fragments of wood, bone, and shells, worked in different designs. Beads of baked earth, cylindrical and of all sorts of shapes, with smooth or polished surfaces, mostly black and red in colour, were chiefly in use.

They were also in the habit of painting their bodies. Numerous objects made of baked earth and greatly varying in design, have been found in Grand Canary. Though a lengthy controversy left the object of these "Pintaderas" (a kind of seal), open to dispute, Dr. Verneau has proved that their sole object was to print the body in various colours. They manufactured rough pottery, mostly without decorations or ornamented by means of the finger-nail. Various implements in use by the ancient Guanchos are still common with their descendants; the most important being the mill for grinding Gofia. (Gofia is the Kooskoosou of the Berbers and Moors to this day). It consists of two grinding-stones resembling those met with even now among the Berber tribes of Morocco and Algiers. In their petty local wars, the weapons of the Guanchos were obviously the same as those of the ancient races of the south of Europe. The polished battle-axe was more in use in Grand Canary, whilst stone and obsidian, roughly cut, was better known in Teneriffe. Besides these they had the lance, the club, sometimes studded with pebbles, the javelin, and they may have known the shield. The numerous natural caves in the mountains served as places of habitation, while others, artificially excavated, spacious, and divided into various compartments were also used. In places where caves were not to be found, they built artificial shelter, small houses of circular shape, and according to the narrative of the conquerors they also built fortifications. The Guanchos were in the habit of embalming certain bodies before burial, and the proceedings apparently varied in the different islands. In Teneriffe and Grand Canary, the corpse was wrapped up in goat and sheep-skins, more or less in number, whilst in other parts a resinous substance was used to preserve the body, which afterwards was deposited in caves difficult of access, or buried under the tumuli. A particular class of persons was set apart to embalm bodies; women only being permitted to preserve bodies of their own sex, and men

for men. The practice of embalming, however, was far from being generally adopted, and the larger number of corpses were simply deposited in caves, in tumuli, or in trenches without employing any means to preserve them from decay.

What we know about the Guancho religion is very obscure. There was a general belief in a Supreme Being called Acoran in Grand Canary, Achihuran in Teneriffe, Eraoranhan in Hierro, and Abora in Palma. The women of the island of Hierro worshipped a goddess under the name of Moneiba. According to tradition the male and female gods lived in mountains, whence they descended to listen to the prayer of the people. In other islands the people venerated the sun, the moon, the earth, and the stars. The belief in the evil spirit was nearly general. The demon of Teneriffe was called Guayota, and lived in the peak of Teyde, which was the hell, called Echeyde.

We have to put the question: Whence have the Guanchos come—that is to say, this race, which seems to have formed the nucleus of the population of the whole archipelago?

For several years past, certain French anthropologists have called attention to the great physical similarity and characteristics which existed between the Guanchos and the ancient French race of the lowlands of Vezère, the Cro-Magnon. The evidence which we possess permits us to state that this race, the Cro-Magnon, had emigrated in large bodies towards the south. It is certain that a branch of this race arrived in Italy. Representatives of this type have been found in Mentone, at Cantalupo (Roman Campagna), and further still at the Isola de Liri. Near the Pyrenees, we find the same type; near Segovia, in Spain (Province of Old Castilia), have lived, during the polished stone period, individuals who show the dolichocephaly of the people of the Cro-Magnon. Near Alhama, in the province of Grenada, skulls of this type have been excavated.

Without going further into details, we may conclude from what is already stated, that the race of Cro-Magnon emigrated towards the south, and crossed the Iberian Peninsula.

In the quaternary age in France, especially towards the neolithic epoch, it seems to have developed itself towards Spain. It arrived in the north of Africa, before the Roman period, as proved by the tombs of Roknia, and it is also probable that it reached the Canary Islands, before the Roman epoch. It follows, therefore, that the Guanchos are the descendants of the Cro-Magnon, who, shortly after their landing in the Canary Islands, had seen the arrival of people from the northern parts of Africa, with whom they entered into communication.

Family ties were established between the Guanchos and the

former; and of this intermixture, which extended up to the conquest, have resulted these numerous mixed types which we find by the side of the almost absolutely pure race.

Etymology.

Nunez de la Peña tells us that the natives of Teneriffe called themselves Guanchinet, which the Spaniards corrupted into Guanchos.

Guan, meant person; and *Chinet* was the same as Teneriffe, so the two words combined signify a man of Teneriffe. *Tenerfiz* =Teneriffe, the island of Hell.

There are a great number of hypotheses in existence about the origin of the geographical name of the Canary Islands. The most acceptable appears to be that the islands, and in particular, Grand Canary, was so-called by the Carthaginians, on account of the great number of large dogs found.

To illustrate the Arab origin of some of the geographical names in the islands, I discovered, with the assistance of some Arab friends, the following names in Grand Canary, and notably on the north-east and east coasts:—

Moya.—*Moia*, water.

Firgas.—*Faradja*, giving ease, on account of its salutiferous mineral wells (still in existence).

Tamaraceita.—*Tamar*, a date tree (a lovely palm-grove rises on the slopes).

Telde.—*Tel*, a hill.

Tafira.—*Tafir*, dusty.

Guayadeque.—*Guaya* (Spanish), grief, sorrow; and *Dekkeh* (Arab), mound. Numerous sepulchres are found in these mountains.

On the west coast I trace:—

Aldea.—*Aldeah*, a village;

And in the south:—

The now extinct volcano Mount del Tabaybel.—*Tabál*, the beating of a drum, a rumbling noise.

Arrceife, the principal port in Lanzarote, is the Arab word *Arraseefah*, terrace.

Taissa.—*Taissah*, unfortunate.

Aissah.—*Aissah*, despair, because in close proximity to a crater now extinct.

APPENDIX.[1]

The Canarian Islands are said to have been known by the Carthaginians, who in their celebrated expedition of Hanno,

[1] From Major A. B. Ellis's "West African Islands," London, 1885.

about 250 years before the Christian era, sailed along the African coast till they arrived within five degrees of the Equator. According to Pliny, the Carthaginians found the islands uninhabited, but saw in every direction the ruins of great buildings, which had been erected by former inhabitants. In more modern times the Canary Islands became first known to Europeans in 1326, when a French ship was driven there in a storm, and they were doubtless afterwards visited by other vessels of the same nationality.

The first record, however, of any communication between Europeans and the aborigines of the islands dates from 1385, when Fernando Peraza, of Sevilla, sailed for the Canarian Islands, with five ships and landed at Lanzarote, the most northerly of the group. According to the good old manner of the time, the, cruel invaders, without receiving any provocation, at once fired upon the inoffensive natives who came crowding down to look at them, killed and wounded many with their arrows, and so terrified the remainder, that they ran away. Other expeditions were subsequently undertaken, but it was not till 1402, at the epoch of Jean de Bethencourt, that any descent was made upon the Canary Islands. After several fruitless attempts in 1461, the Spaniards endeavoured to obtain, by fraud, that foothold which they were unable to obtain by force of arms. Of all the Canarians, the Guanchos of Teneriffe held out the longest against the conquerors. It was not till 1512 that they lost their independence and were entirely subdued by the Spaniards. In consequence of several causes, and particularly without doubt, that the ancient language of these islanders had to give way to Spanish, it had been generally admitted that the population had entirely perished, exterminated by the conqueror, or carried away by the plague of 1494.

ANTHROPOLOGICAL MISCELLANEA.

Address *to the* Anthropological Section *of the* British Association *at* Manchester.

By Prof. A. H. Sayce, M.A., President of the Section.

Surprise has sometimes been expressed that anthropology, the science of man, should have been the last of the sciences to come into being. But the fact is not so strange as it seems at first sight to be. Science originated in curiosity, and the curiosity of primitive man, like the curiosity of a child, was first exercised upon the objects around him. The fact that we are separate from the world about us, and that the world about us is our own creation, is a conviction which grows but slowly in the mind either of the individual or of the race in general. The child says, "Charley likes this," before he learns to say, "*I* like this," and in most languages the objective case of the personal pronoun exhibits earlier forms than the nominative.

Moreover, it is only through the relations that exist between mankind and external nature that we can arrive at anything like a scientific knowledge of man. Science, it must be remembered, implies the discovery of general laws, and general laws are only possible if we deal, not with the single individual, but with individuals when grouped together in races, tribes, or communities. We can never take a photograph of the mind of an individual, but we can come to know the principles that govern the actions of bodies of men, and can employ the inductive method of science to discover the physical and moral characteristics of tribes and races. It is through the form of the skull, the nature of the language, the manners and customs, or the religious ideas of a people that we can gain a true conception of their history and character. The thinker who wishes to carry out the precept of the Delphian oracle and to "know himself" must study himself as reflected in the community to which he belongs. The sum of the sciences which deal with the relations of the community to the external world will constitute the science of anthropology.

The field occupied by the science is a vast one, and the several workers in it must be content to cultivate portions of it only. The age of "admirable Crichtons" is past; it would be impossible for a single student to cover with equal success the whole domain of anthropology. All that he can hope to do is to share the labour

with others, and to concentrate his energies on but one or two departments in the wide field of research. A day may come when the work we have to perform will be accomplished, and our successors will reap the harvest that we have sown. But meanwhile we must each keep to our own special line of investigation, asking only that others whose studies have lain in a different direction shall help us with the results they have obtained.

I shall therefore make no apology for confining myself on the present occasion to those branches of anthropological study about which I know most. It is more particularly to the study of language, and the evidence we may derive from it as to the history and development of mankind, that I wish to direct your attention. It is in language that the thoughts and feelings of man are mirrored and embodied; it is through language that we learn the little we know about what is passing in the minds of others. Language is not only a means of intercommunication, it is also a record of the ideas and beliefs, the emotions and the hopes of the past generations of the world. In spoken language, accordingly, we may discover the fossilised records of early humanity, as well as the reflection of the thoughts that move the society of to-day. What fossils are to the geologist words are to the comparative philologist.

But we must be careful not to press the testimony of language beyond its legitimate limits. Language is essentially a social product, the creation of a community of men living together and moved by the same wants and desires. It is one of the chief bonds that bind a community together, and its existence and development depend upon the community to which it belongs. If the community is changed by conquest or intermarriage or any other cause the language of the community changes too. The individual who quits one community for another has at the same time to shift his language. The Frenchman who naturalises himself in England must acquire English; the negro who is born in the United States must adopt the language that is spoken there.

Language is thus a characteristic of a community, and not of an individual. The neglect of this fact has introduced untold mischief not only into philology, but into ethnology as well. Race and language have been confused together, and the fact that a man speaks a particular language has too often been assumed, in spite of daily experience, to prove that he belongs to a particular race. When scholars had discovered that the Sanskrit of India belonged to the same linguistic family as the European languages, they jumped to the conclusion that the dark-skinned Hindu and the light-haired Scandinavian must also belong to one and the same race. Time after time have I taken up books which sought to determine the racial affinities of savage or barbarous tribes by means of their language. Language and race, in short, have been used as synonymous terms.

The fallacy is still so common, still so frequently peeps out where we should least expect it, that I think it is hardly superfluous,

even now, to draw attention to it. And yet we have only to look around us to see how contrary it is to all the facts of experience. We Englishmen are bound together by a common language, but the historian and the craniologist will alike tell us that the blood that runs in our veins is derived from a very various ancestry. Kelt and Teuton, Scandinavian and Roman have struggled together for the mastery in our island since it first came within the horizon of history, and in the remoter days of which history and tradition are silent archæology assures us that there were yet other races who fought and mingled together. The Jews have wandered through the world adopting the languages of the peoples among whom they have settled, and in Transylvania they even look upon an old form of Spanish as their sacred tongue. The Cornishman now speaks English; is he on that account less of a Kelt than the Welshman or the Breton?

Language, however, is not wholly without value to the ethnologist. Though a common language is not a test of race, it is a test of social contact. And social contact may mean—indeed very generally does mean—a certain amount of intermarriage as well. The penal laws passed against the Welsh in the fifteenth century were not sufficient to prevent marriages now and then between the Welsh and the English, and in spite of the social ostracism of the negro in the Northern States of America intermarriages have taken place there between the black and the white population. But in the case of such intermarrying the racial traits of one member only of the union are, as a general rule, preserved. The physical and moral type of the stronger parent prevails in the end, though it is often not easy to tell beforehand on which side the strength will lie. Sometimes, indeed, the physical and moral characters are not inherited together, the child following one of his parents in physical type while he inherits his moral and intellectual qualities from another. But even in such cases the types preserve a wonderful fixity, and testify to the difficulty of changing what we call the characteristics of race.

Herein lies one of the most obvious differences between race and language, a difference which is of itself sufficient to show how impossible it must be to argue from the one to the other. While the characteristics of race seem almost indelible, language is as fluctuating and variable as the waves of the sea. It is perpetually changing in the mouths of its speakers; nay, the individual can even forget the language of his childhood and acquire another which has not the remotest connection with it. A man cannot rid himself of the characteristics of race, but his language is like his clothing which he can strip off and change almost at will.

It seems to me that this is a fact of which only one explanation is possible. The distinctions of race must be older than the distinctions of language. On the monuments of Egypt, more than four thousand years ago, the Libyans are represented with the same fair European complexion as that of the modern Kabyles, and the painted tomb of Rekh-mâ-ra, a Theban prince who lived in the

sixteenth century before our era, portrays the black-skinned negro, the olive-coloured Syrian, and the red-skinned Egyptian with all the physical peculiarities that distinguish their descendants to-day. The Egyptian language has ceased to be spoken even in its latest Coptic form, but the wooden figure of the "Sheikh el-beled" in the Bulaq Museum, carved 6,000 years ago, reproduces the features of many a *fellah* in the modern villages of the Nile. Within the limits of history racial characteristics have undergone no change.

I see, therefore, no escape from the conclusion that the chief distinctions of race were established long before man acquired language. If the statement made by M. de Mortillet is true, that the absence of the mental tubercle, or bony excrescence in which the tongue is inserted, in a skull of the Neanderthal type found at La Naulette, indicates an absence of the faculty of speech, one race at least of palæolithic man would have existed in Europe before it had as yet invented an articulate language. Indeed, it is difficult to believe that man has known how to speak for any very great length of time. On the one hand, it is true, languages may remain fixed and almost stationary for a long series of generations. Of this the Semitic languages afford a conspicuous example. Not only the very words, but even the very forms of grammar are still used by the Bedouin of Central Arabia that were employed by the Semitic Babylonians on their monuments five thousand years ago. At that early date the Semitic family of speech already existed with all its peculiarities, which have survived with but little alteration up to the present day. And when it is remembered that Old Egyptian, which comes before us as a literary and decaying language a thousand years earlier, was probably a sister of the parent Semitic speech, the period to which we must assign the formation and development of the latter cannot fall much short of ten thousand years before the Christian era. But on the other hand there is no language which does not bear upon its face the marks of its origin. We can still trace through the thin disguise of subsequent modifications and growth the elements, both lexical and grammatical, out of which language must have arisen. The Bushman dialects still preserve the inarticulate clicks which preceded articulate sounds in expressing ideas; behind the roots which the philologist discovers in allied groups of words lie, plainly visible, the imitations of natural sounds, or the instinctive utterances of human emotion; while the grammar of languages like Eskimaux or the Aztec of Mexico carries us back to the first mechanism for conveying the meaning of one speaker to another. The beginnings of articulate language are still too transparent to allow us to refer them to a very remote era. I once calculated that from thirty to forty thousand years is the utmost limit that we can allow to man as a speaking animal. In fact, the evidence that he is a drawing animal, derived from the pictured bones and horns of the palæolithic age, mounts back to a much earlier epoch than the evidence that he is a speaking animal.

Mr. Horatio Hale has lately started a very ingenious theory to

account, not indeed for the origin of language in general, but for the origin of that vast number of apparently unallied families of speech which have existed in the world. He has come across examples of children who have invented and used languages of their own, refusing at the same time to speak the language they heard around them. As the children belonged to civilised communities the languages they invented did not spread beyond themselves, and after a time were forgotten by their own inventors. In an uncivilised community, however, it is quite conceivable that such a language might continue to be used by the children after they had begun to grow up and be communicated by them to their descendants. In this case a wholly new language would be started, which would have no affinities with any other, and after splitting into dialects would become the parent of numerous derived tongues. I must confess that the evidence brought forward by Mr. Hale in support of his theory is not quite convincing to me. It has yet to be proved that the words used by the children to whom he refers were not echoes of the words used by their elders. If they were, a language that originated in them would show more signs of lexical affinity to the older language than is the case with one family of speech when compared with another. On the other hand, the theory would tend to throw light on the curious fact that the morphological divisions of language are also geographical.

By the morphology of a language I mean its structure, that is to say, the mode in which the relations of grammar are expressed in a sentence, and the order in which they occur. These vary considerably, the chief variations being represented by the polysynthetic languages of America, the isolating languages of Eastern Asia, the postfixal languages of Central Asia, the prefixal languages of Africa, and the inflectional languages of Europe and Western Asia. Now it will be observed that each of these classes of language is associated with a particular part of the globe, the isolating languages, for example, being practically confined to Eastern Asia, and the polysynthetic languages to America. Within each class there are numerous families of speech between which no relationship can be discovered beyond that of a common structure; they agree morphologically, but their grammar and lexicon show no signs of connection. If we adopt Mr. Hale's theory we might suppose that the genealogically distinct families of speech grew up in the way he describes, while their morphological agreement would be accounted for by the inherited tendency of their children to run their thinking into a particular mould. The words and contrivances of grammar would be new, the mental framework in which they were set would be an inheritance from former generations.

I have spoken of the inflectional languages as belonging to Europe and Western Asia. This is true if we give a somewhat wide extension to the term inflectional, and make it include not only the Indo-European group, but the Georgian and Semitic groups as well. But, strictly speaking, the Indo-European, or Aryan, languages have a structure of their own, which differs very

markedly from that of either the Georgian or the Semitic families. The Semitic mode of expressing the relations of grammar, by changing the vowels within a framework of consonants differs as much from the Aryan mode of expressing them by means of suffixes as does the Semitic partiality for words of three consonants from the Indo-European carelessness about the number of syllables in a word. Though it is quite true that the Semitic languages at times approach the Indo-European by using suffixes to denote the forms of grammar, while at other times the Indo-European languages may substitute internal vowel change for external flection, nevertheless, in general, the kind of flection employed by the two families of speech is of a totally different character.

This difference of structure, coupled with a complete difference in phonology, grammar, and lexion, has always seemed to me to negative the attempts that have been made to connect the Aryan and Semitic families of language together. The attempts have usually been based on the old confusion between language and race; both Aryans and Semites belong to the white race; therefore it was assumed their languages must be akin. As long as it was generally agreed that the primitive home of the Aryan languages was, like that of the Semitic languages, the western part of Asia, the confusion was excusable. If the earliest seats of the speakers of each were in geographical proximity, there was some reason for believing that languages which were alike spoken by members of the white race, and were alike classed as inflectional, would, when properly questioned, show signs of a common origin.

But that general agreement no longer exists. While the Asiatic origin of the Semitic languages is beyond dispute, scholars have of late years been coming more and more to the conclusion that Europe was the cradle of the Aryan tongues. Their European origin was first advocated by our countryman Dr. Latham, and was subsequently defended by the eminent comparative philologist Dr. Benfey; but it is only within the last half-dozen years that the theory has won its way to scientific recognition. Different lines of research have been converging towards the same result, and indicating North-eastern Europe as the starting-point of the Indo-European languages, while the evidences invoked in favour of their Asiatic origin have one and all broken down.

These evidences chiefly rested on the supposed superiority of Sanskrit over the other Indo-European languages as a representative of the parent-speech from which they were all descended. The grammar and phonology of Sanskrit were imagined to be more archaic, more faithful to the primitive pattern than those of its sister-tongues. It was argued that this implied a less amount of migration and change on the part of its speakers, a nearer residence, in fact, to the region where the parent-speech had once been spoken. As a comparison of the words denoting certain objects in the Indo-European languages showed that this region must have had a cold climate, it was placed on the slopes of the Hindu-Kush or at the sources of the Oxus and Jaxartes.

But we now know that instead of being the most faithful representative of the parent-speech, Sanskrit is in many respects far less so than are its sister-languages of Europe. Its vocabulary, for instance, has been thrown into confusion by the coalescence of the three primitive vowel sounds ă, ĕ, ŏ into the single monotonous *ă*, a corruption which is paralleled by the coalescence of so many vowels in modern cultivated English in the so-called "neutral" *ə*. Greek, or even the Lithuanian, which may still be heard to-day from the lips of unlettered peasants, has preserved more faithfully than the Sanskrit of India the features of the parent Aryan. If the faithfulness of the record is any proof of the geographical proximity of one of the Indo-European languages to their common mother, it is in the neighbourhood of Lithuania, rather than in the neighbourhood of India, that we ought to look for traces of the first home of the Aryan family.

But the theory of the Asiatic origin of the Indo-European family has not only been deprived of its main support by the dethronement of Sanskrit, and the transfer of its primacy to the languages of Europe, what Professor Max Müller has termed "linguistic palæontology" has further assisted in overthrowing the crumbling edifice. When we find words of similar phonetic form and similar meaning in both the Asiatic and the European branches of the Aryan family—words, too, which it can be shown have not been borrowed by one Indo-European language from another—we are justified in concluding that the objects or phenomena denoted by them were already known to the speakers of the parent language.

* * * * *

Four years ago a valuable contribution to the linguistic palæontology of the Aryan languages was made by Professor Otto Schrader. For the first time the question was approached from the present level of comparative philology, and all words were excluded from comparison which did not satisfy the requirements of phonetic law. The results were sadly disquieting to the believers in that idyllic picture of primitive Aryan life to which we had so long been accustomed. Professor Schrader proved that the speakers of the parent Aryan language must not only have lived in a cold climate—a fact which was known already—but that they must have lived in the stone age, with the skins of wild beasts only to protect them from the rigours of the winter, and nothing better than stone weapons with which to ward off the attacks of savage animals. Their general culture was on a level with their general surroundings. It was little better than that of the Fuegian before he came into contact with European missionaries. The minuteness with which the varying degrees of family relationship were named, instead of indicating an advanced social life, as was formerly imagined, really indicated the direct contrary. The primitive Aryan was indeed acquainted with fire; he could even sew his skins together by means of needles of bone; and possibly could spin a little with the help of rude spindle-whorls; but beyond

this his knowledge of the arts does not seem to have extended. If he made use of gold or meteoric iron, it was only of the unwrought pieces which he picked up from the ground and employed as ornaments; of the working of metals he was entirely ignorant. But he already practised a kind of rude agriculture, though the art of grinding corn was as yet unknown, and crushed spelt was eaten instead of bread; while the community to which he belonged was essentially that of pastoral nomads, who changed from season to season the miserable beehive huts of wattled mud in which they lived. They could count at least as far as a hundred, and believed in a multitude of ghosts and goblins, making offerings to the dead, and seeing in the bright sky a potent deity.

In calling the speaker of the Aryan parent-speech the primitive Aryan I must not be supposed to be prejudging the question as to the particular race to which he belonged. This is a question which has recently been handled with great ability by an Austrian anthropologist—Dr. Karl Penka. In a remarkable book, published at the end of last year, he endeavours to substantiate the hypothesis advanced in an earlier work, and to show that the first speakers of the Aryan languages were the fair-haired, blue-eyed, light-complexioned dolichocephalic race, which is still found in its greatest purity in Scandinavia; that it was this race which in the neolithic period spread southwards, imposing its yoke upon subject populations, like the Norsemen and Normans of later days, and carrying with it the dialects which afterwards developed into the Aryan languages; and that, finally, it was the same race which in the remote days of the palæolithic age inhabited western and central Europe, where it has left its remains in the typical skulls of Cannstatt and Engis. Dr. Penka would ascribe to its long residence in the semi-arctic climate of palæolithic Europe the permanent blanching of its skin and hair—a form of albinoism which Dr. Poesche in 1878 endeavoured to explain by the climatic conditions of the Rokitno marshes in Russia, where he placed the cradle of the white Aryan race.

It cannot be denied that all the probabilities are at present on Dr. Penka's side, so far as his main contention is concerned. Without denying that the speakers of the Aryan parent speech may have already included slaves or wives of an alien race, it is probable that the majority of them were of one blood. They formed a single community, nomad it is true, and therefore less likely to mix with foreigners, but still sufficiently a single community to speak a language the several dialects of which were so alike as to be mutually intelligible. In the social condition in which the speakers were, and in an age when the waste lands of of the world were still extensive, the greater part of such a community must necessarily, we should think, have belonged to the same race. . . . . Penka has striven to show that the animals whose bones or shells are found in the Scandinavian kitchen-middens are just those whose names are common to the Indo-European languages, or at all events the European section of

the latter. Now, the skulls disinterred from the prehistoric burial-places of Denmark and the southern districts of Sweden and Norway are, for the most part, identical with the skulls still characteristic of the Scandinavian population where they accompany a fair skin and light hair and eyes. By combining these two facts we arrive at the conclusion that the fair Scandinavian race is the modern descendant of the race which spoke the parent language of the primitive Aryan community, and left traces of itself in the Scandinavian kitchen-middens. The conclusion is supported by the testimony of history. On the one hand, we have the testimony of classical writers that the Aryan-speaking Kelts of the Christian era were not the dark, small-limbed population which now occupies the larger part of France, but men of large stature, with the blue eyes and fair hair of their Teutonic brethren; while the ideal specimens of humanity conceived of by the aristocratic art of Italy and Greece were the golden-haired Apollo and the blue-eyed Athêne. On the other hand, it was from Scandinavia that in later times other bands of warriors poured forth, who made their way into the countries of the Mediterranean, and even Asia, and established themselves as conquering aristocracies in the midst of subject populations. The Kelts succeeded in reaching Asia Minor, the Scando-German hordes overthrew the Roman empire, the Northmen established themselves from Russia on the east to Iceland and Greenland on the west, and the Normans made Sicily their own long before the days of the German Frederick. The only point in which the later historical irruptions of the Scandinavian peoples differed from their prehistoric ones was, that while the later irruptions were made by sea, the older were made by land. The sail was unknown to the tribes of the north until the age of their intercourse with the Romans, from whom they borrowed both the conception and the name of the *sagulum*, or "sail." The course of their migrations must have followed the valleys of the great rivers.

If southern Scandinavia is thus to be regarded as the original home of the Aryan languages, and the race which first spoke those languages, and which we may therefore call Aryan, is to be identified with the Scandinavian type, it follows that the further south and east we advance from this primary starting-point the less pure will the type become. It will be in the neighbourhood of that starting-point and in northern Europe that we shall expect to find the largest number of undiluted Aryan languages and the purest examples of the Aryan breed. In Greece and Armenia, in Persia and India we must look for mixture and decay. And such indeed is the fact. Mr. Wharton has found, by a careful analysis of the Greek lexicon, that out of 2,740 primary words only 1,580 can be referred with any probability to an Indo-European origin, while the prevailing racial type in ancient as in modern Greece was distinctly non-Aryan. Indeed, I am inclined to believe that the culture revealed by the excavations at Mykênæ, Tiryns, and on other prehistoric Greek sites belonged not to a Hellenic but to a

pre-Hellenic population, and that the Aryan Greeks first made their appearance in Hellas at the epoch of what later tradition called the Dorian immigration. It was to the north that Greek legends pointed as the primæval home of the Hellenic race and civilisation, and Dôdôna ever continued to be revered as the oldest sanctuary of the Hellenic world. In India it is notorious that the Aryan-speaking Hindus entered the country from the north-west, and failed to spread far into the burning plains of the south. The date of their invasion is uncertain, but for myself I have grave doubts whether it was earlier than the eighth or even the seventh century B.C. At all events it was not until after the seventh century B.C., as we now know from the express testimony of the cuneiform inscriptions of Van, that the Aryan-speaking Armenians entered the land which now bears their name, and recent philological researches have confirmed the assertion of Greek writers that the Armenians were a colony of the Phrygians who had themselves emigrated from Thrace. Up to the closing days of the Assyrian empire the monuments make it clear that no Aryans had as yet settled between the Kurdish ranges on the east and the Halys on the west.

But while the extension into Asia of what I will now, following Penka's example, call the Aryan race, seems to be referred to a comparatively recent period, there is a curious fact which goes to show that the same, or a closely allied, race once spread along the northern coast of Africa. On Egyptian monuments, which date back to the sixteenth century before our era, the Libyan tribes of this district are described and depicted as white. Their descendants are still to be found in the mountainous parts of the coast, those of Algeria being commonly known under the name of Kabyles. I saw a good deal of them last winter, and must confess to being greatly struck by their appearance. I had known, of course, that they belonged to the white race and were characterised by blue eyes and light hair, but I was not prepared to find that their complexion was of that transparent whiteness which freckles readily and is supposed to mark the so-called red Kelt. They are dolichocephalic, and as their skulls agree with those discovered in the prehistoric cromlechs of Roknia and other places it is plain that their distinctive features are not due, as was formerly supposed, to intermixture with the Vandals.

The cromlechs in which they once buried their dead are quite as remarkable as their physical characteristics. Cromlechs of a similar shape are found extending through Spain and western France to the northern portion of the British Isles. Since dolichocephalic skulls occur in connection with them, while the physical characteristics of the modern Kabyle resemble so strikingly those of a particular portion of the modern Irish population, we seem driven to infer that the Kabyle and the "red Kelt" are alike fragments of a race that once spread from Scotland and Ireland to the northern coast of Africa and interred its dead in chambers formed of five large blocks of stone. Though the custom of burying in these

cromlechs continued into the bronze age, the majority of them go back to the neolithic period.

Are we to suppose, then, that one stream of Aryan immigrants, after making its way to the west, wandered along the western coast of Europe, and eventually crossed the Straits of Gibraltar and took possession of Africa? Or are we to believe that the Aryan race of Southern Scandinavia was allied in blood, though not in language, with a population which inhabited the extreme west of Europe, and had, it may be, at the close of the glacial epoch, passed over to the neighbouring mountains of Africa? It must be remembered that the Kabyle complexion is not precisely the same as that of the Scandinavian. Both are white, but the skin of the one has a semi-transparent appearance, while the whiteness of the other may be described as mealy. It will be worth while to determine whether between the dolichocephalism of the Kabyle and the dolichocephalism of the Scandinavian any distinction can be drawn.

The question has a bearing on the origin of a part of our own population. I have already compared the Kabyle with the "red Kelt." But the expression "red Kelt," like most popular expressions, is by no means exact. It confuses in one two distinct types. The large-limbed, red-haired Highlander, who calls to mind the description given of the Kelts by the Latin historians, stands in marked contrast to the small-limbed, light-complexioned Kelt of certain districts in Ireland, whose skin is freckled rather than burnt red by the sun. The determination of the several racial elements in these islands is particularly difficult on account of the intermixture of population, and nowhere is the difficulty greater than in the case of the Keltic portion of the community. Long before the Roman conquest the intrusive Aryan Kelt had been intermarrying with the older inhabitants of the country, who doubtless belonged to more than one race, the result being that the so-called Keltic race is an amalgamation of races differing physiologically but dominated by a common moral and intellectual character—the consequence of subjection for a long series of generations to the same conditions of life. It has become a commonplace of ethnology that the so-called Keltic race includes not only the fair complexioned Aryan Kelt, but also the "black Kelt" or Iberian with dark skin, black hair and eyes, and small limbs. The subject, however, is much more complex than this simple division would imply. We have seen that under the "red Kelt" are included two distinct varieties; the "black Kelt" is equally irreducible to a single type, while the fact that two types of "red" and "black" recur in the same family—my own, for example—not only indicates their long-continued intermixture, but suggests the existence of intermediate varieties. The limitations and relations of dolichocephalism and brachycephalism within the race also need further investigation. I hope that this meeting, held as it is on the borders of what is still a distinctively Keltic country, may help to settle these and similar problems.

Meanwhile I will conclude this address, which has already extended to an inordinate length, by directing your attention to two lines of evidence which have an important bearing on the question of the extent to which the Keltic element enters into the existing British population. A few years ago it was the fashion to assert that the English people were mainly Teutonic in origin, and that the older British population had been exterminated in the protracted struggle it carried on with the heathen hordes of Anglo-Saxon invaders. The statement in the "Saxon Chronicle" was quoted that the garrison of Anderida, or Pevensey, when captured by the Saxons in A.D. 491, was all put to the sword. But it is obvious that the fact would not have been singled out for special mention had it not been exceptional, while it is equally obvious that invaders who came by sea can hardly have brought their wives and children with them, and must have sought for both wives and slaves in the natives of the island. Mr. Coote, in his "Romans of Britain," and Mr. Seebohm, in his "English Village Community," have pointed out the continuity of laws and customs and territorial rights between the Roman and the Saxon eras, presupposing a continuity of population, and anthropologists have insisted that the survival of early racial types in all parts of the country cannot be accounted for by the settlement of the Bretons who followed William the Conqueror, or of the Welsh who came into England when the penal laws against them were repealed by Henry VIII. But the advocates of the theory of extermination had always one argument which seemed to them unanswerable, and which indeed was the origin of their theory. The language of the Anglo-Saxons contains scarcely any words borrowed from Keltic. Such a fact was held to be inexplicable except on the hypothesis that the speakers of the Keltic dialects were all exterminated before any intercourse was possible between them and the invading Teuton.

But I think I can show that the fact admits of quite another explanation. Roman Britain was in the condition of Roman Gaul; it was a Roman province, so thoroughly Romanised indeed that before the end of the first century, according to Tacitus ("Agric.," 18–21), even the inhabitants of North Wales had adopted the Roman dress and the Roman habits of luxury. After four centuries of Roman domination it is not likely under these circumstances that the dialects of the British tribes would have resisted the encroachment of the Latin language any more than did the dialects of Gaul. The language, not only of government and law, but also of trade and military service, was Latin, while the slaves and servants who cultivated the soil were bound to understand the language of their masters. Moreover Britain was a military colony; the natives were drafted into the army, and there perforce had to speak Latin. If Latin had not been the language of the country at the time the Romans left it, the fact would have been little short of a miracle.

That it was so is certified by more than one piece of evidence.

The inscriptions which have survived from the period of the Roman occupation are numerous; with the exception of three or four Greek ones, they are all in Latin. Of a Keltic language or dialect there is no trace. When the Romans had departed, and the inhabitants of Wales and Cornwall had been cut off from intercourse with the civilised world, Latin was still the ordinary language of the mortuary texts. It is only gradually that Keltic oghams take their place by the side of the Roman characters. When St. Patrick writes a letter to the Welsh prince of Cardiganshire, addressed not only to him but to his people as well, it is in the Latin language; when St. Germanus crosses into Britain to settle a theological controversy, and leads the people to victory against the Saxon invader, he has no difficulty in being understood; and the proper names of British leaders continue to be Roman long after the departure of the Roman legions. What clinches the matter, however, is the positive statement of Gildas, the British writer, the solitary witness who has survived to us from the dark period of heathen invasion. He asserts that the ships called "keels" by the Saxons were called *longæ naves* "in *our* language" ("nostra lingua").[1] In the middle of the sixth century, therefore, Latin was still the language of the Kelt south of the Roman Wall. Such being the case it is not Keltic but Latin words that we must expect to have been borrowed by Anglo-Saxon, if the British population, instead of being exterminated, lived under and by the side of their Teutonic invaders. Now these borrowed Latin words exist in plenty. They have come not only from the speech of the towns, but also from the speech of the country, proving that the country population must have used Latin like the inhabitants of the towns. In an interesting little book by Professor Earle on the Anglo-Saxon names of plants a list is given of the names of trees and vegetables that have been taken from a Latin source. Where the tree or the vegetable was one with which the invaders had not been acquainted in their original home, the name they gave to it was a Latin one, like the *cherry* or *cerasus*, the *box* or *buxus*, the *fennel* or *feniculum*, the *mallow* or *malva*, the *poppy* or *papaver*, the *radish* or *radix*. Such names they could have heard only from the serfs who tilled the ground for their new lords, not from the traders and soldiers of the cities. It is much the same when we turn to the names of agricultural implements which imply a higher order of culture than the simple plough or mattock, the name of which last, however, is itself of Keltic origin. Thus the coulter is the Latin *culter*, the sickle is the Latin *secula*. That other agricultural implements bore Teutonic names proves merely that the Saxons and Angles were already acquainted with them before they had quitted their primitive seats.

The philological argument has thus been cut away from under the feet of the advocates of the theory of extermination, and

[1] "Hist.," p. 23.

shown to tell precisely the contrary tale. It has disappeared like the philological argument by which the theory of the origin of the Aryans in Asia was once supposed to be supported. But there still remains one difficulty in our path.

This is the fact that the languages spoken in Wales, and till recently in Cornwall, are Keltic and not Latin. If Latin had been the language of the Keltic population of southern Britain when the Romans left the island, how is it that where the Keltic population still retains a language of its own that language is Keltic? The answer to this question is to be found in history and tradition. Up to the sixth century the Teutonic invaders gained slowly but steadily upon the resisting Britons. They forced their way to the frontiers of what is now Wales, and there their further course was checked. The period when this took place is the period when Welsh literature first begins. But it begins, not in Wales, but in Strathclyde or South-western Scotland, to the north of the Roman Wall. Its first records relate to battles that took place in the neighbourhood of Carlisle. From thence its bards and heroes moved southwards into North Wales. Tradition commemorated the event as the arrival in Wales of "Cunedda's men." The sons of Cunedda founded the lines of princes who subsequently ruled in Wales, and the old genealogies mark the event by suddenly substituting princes with Welsh names for princes with Latin names. The rude Keltic tribes of Strathclyde came to the assistance of their more cultured brethren in the south, checking the further progress of the foreigner and imposing their domination and language upon the older population of the country. It is probable that the disappearance of Latin was further aided not only by the destruction of the cities and the increasing barbarism of the people, but also by the settlement of Irish colonies, more especially in South Wales. At all events the ruin of cities like Caerleon and Caerwent must be ascribed to Irish marauders. We can now explain why it is not only that Wales speaks Welsh and not Latin, but also why a part of the country, which, according to Professor Rhŷs, was mostly peopled by Gaelic tribes before the Roman conquest, speaks Cymric and not Gaelic. As for Cornish its affinities are with Breton, and since history knows of frequent intercourse between Cornwall and Brittany in the age that followed the departure of the Romans we may see in the Cornish dialect the traces of Breton influence.

The arrival of "Cunedda's men" and the re-Keltisation of Wales lead me to the second line of evidence to which I have alluded above. The bearing of the costume of a people upon their ethnography is a matter which has been much neglected. But there are few things about which a population—more especially in an early stage of society—is so conservative as in the matter of dress. When we find the Egyptian sculptor representing the Hittites of the warm plains of Palestine clad in the snow-shoes of the mountaineer we are justified in concluding that they must have descended from the ranges of the Taurus, where the bulk of

their brethren continued to live, just as the similar shoes with turned-up ends which the Turks have introduced among the upper classes of Syria, Egypt, and northern Africa point to the northern origin of the Turks themselves. Such shoes are utterly unsuited for walking in over a country covered with grass, brushwood, or even stones; they are on the contrary admirably adapted for walking on snow.

Now the dress of Keltic Gaul and of southern Britain also when the Romans first became acquainted with it was the same as the dress which "linguistic palæontology" teaches us had been worn by the primitive Aryans in their first home. One of its chief constituents were the *braccæ*, or trousers, which accordingly became to the Roman the symbol of the barbarian. We learn, however, from sculptures and other works of art that before the retirement of the Romans from the northern part of Europe they had adopted this article of clothing, at all events during the winter months. That the natives of southern Britain continued to wear it after their separation from Rome is clear from a statement of Gildas ("Hist.," 19) in which he refers in no flattering terms to the kilt of the Pict and the Scot. Yet from within a century after the time of Gildas there are indications that the northern kilt which he regards as so strange and curious had become the common garb of Wales. When we come down to the twelfth century we find that it is the national costume. Giraldus Cambrensis gives us a description of the Welsh dress in his own time, from which we learn that it consisted simply of a tunic and plaid. It was not until the age of the Tudors, according to Lluyd, the Welsh historian of the reign of Elizabeth, that the Welsh exchanged their own for the English dress.[1] The Welsh who served in the army of Edward II at Bannockburn were remarked even by the Lowland Scotch for the scantiness of their attire,[2] and we have evidence that it was the same a century later.[3] If we turn to Ireland we find that in the days of Spenser, and later, the national costume of the Irish was the same as that of the Welsh and the Highland Scotch. The knee-breeches and sword-coat which characterise the typical Irishman in the comic papers are survivals of the dress worn by the English at the time when it was adopted in Ireland.

The Highland dress, therefore, was once worn not only in the Scotch Highlands and in Ireland, but also in Wales. It characterised the Keltic parts of Britain with the exception of Cornwall and Devonshire. Yet we have seen that up to the middle of the sixth century, at the period when Latin was still the language of the fellow-countrymen of Gildas, and when "Cunedda's men" had not as yet imposed their domination upon Wales, the old Keltic dress with trousers must have been the one in common use. Now we can easily understand how a dress of the kind could

[1] "The Breviary of Brytaine," Twyne's translation, page 35 (ed. 1573).
[2] Barbour's "Bruce," ix, pages 600–603.
[3] *See* Jones' "History of the County of Brecknock, vol. i, page 283; *comp.* "Archæologia Cambrensis," 5th series, No. 7 (1885), page 227.

have been replaced by the kilt in warm countries like Italy and Greece; what is not easily conceivable is that such a dress could have been replaced by the kilt in the cold regions of the north. In warm climates a lighter form of clothing is readily adopted; in cold climates the converse is the case.

I see, consequently, but one solution of the problem before us. On the one hand, there was the distinctive Keltic dress of the Roman age, which was the same as the dress of the primitive Aryan, and was worn alike by the Kelts of Gaul and Britain and the Teutons of Germany; on the other hand, there was the scantier and colder dress which originally characterised the coldest part of Britain, and subsequently mediæval Wales also. Must we not infer, in the first place, that the aboriginal population of Caledonia and Ireland was not Keltic—or at least not Aryan Keltic—and, secondly, that the dominant class in Wales after the sixth century came from that northern portion of the island where the kilt was worn? Both inferences, at all events, agree with the conclusions which ethnologists and historians have arrived at upon other grounds.

Perhaps what I have been saying will show that even a subject like the history of dress will yield more results to ethnological study than is usually supposed. It will be another illustration of the fact that the student of humanity cannot afford to neglect any department of research which has to do with the life of man, however widely removed it may seem to be from science and scientific methods of enquiry. "Homo sum; humani nihil a me alienum puto."

On *the* Notes *sounded by* Mr. Galton's Whistles *for testing the limit of* Audibility *of* Sound.

By W. N. Shaw, Esq., M.A.

In order to test the limit of audibility of sound, an adjustable whistle is made by the Cambridge Scientific Instrument Company on the plan designed by Mr. Galton some 10 years ago. It is a whistle with a very narrow pipe; the length of the pipe can be adjusted by means of a piston, a wire ·73 mm. in diameter, sliding in the pipe. This sliding wire carries a disc, and the frame to which the whistle is attached and in which the outer end of the wire piston rests, carries a parallel disc. As the piston is pushed in, these two discs approach each other. Their distance apart can be measured by inserting a graduated wedge, and gives at once the length of the pipe of the whistle. The whistle is blown by compressing a small india-rubber bladder attached to it. The apparatus is used to determine the pitch of the highest note audible by a particular person in the following manner. The piston is adjusted till the vibration produced by the whistle is just inaudible; the distance between the discs is then read, giving a length of whistle

pipe l. From this observation, the pitch of the corresponding note can be calculated thus:—disregarding all corrections, the wave length of the note λ in free air should be $4\,l$; and if v be the velocity of sound in air (at the temperature of observation) and N the vibration number or pitch of the note—

$$N = \frac{v}{\lambda} = \frac{v}{4\,l}.$$

The corrections which have been disregarded in assuming this simple formula arise from the following considerations:—

(1.) The velocity of sound in the narrow pipe of the whistle is not the same as in free air, so that v cannot fairly be substituted from the known value of the velocity of sound in air. The correction on this account cannot be accurately arrived at, for the change in the velocity, while it increases with a diminishing diameter of pipe is less for high notes than for low ones, and the relation between the value of the correction and the pitch—a matter of great importance when the pitch is very high—is not well understood (see Wüllner "Experimental-Physik," vol. 1, p. 799).

(2.) Four times the measured length of an ordinary organ pipe is not found to correspond to the true wave length of the note produced: the formula in such cases is more accurately—

$$N = \frac{v}{4\,(l + x)},$$

where x is to be regarded as a correction to the observed length of pipe.

This gives satisfactory results with organ pipes. The value of x for a pipe with a width of 40 mm. and a length about seven times as great, was determined by Wertheim to be 1·5 times the diameter, and the correction in other cases roughly corresponded. I know of no observations with very narrow pipes and high notes from which the corresponding correction can be drawn.

This correction to the length of the pipe may moreover be affected by the pressure of the air by which the whistle is blown. The whistles require a pressure of some 20 cm. of water to make them speak, so that there is a possibility of variation much greater than that which occurs with an ordinary organ pipe requiring a very small air-pressure. The effect of increasing the pressure, as will be shewn below, is to raise the pitch of the note, or, in other words, to diminish the value of the correction x.

The acoustical properties of such whistles seemed, therefore, to require some independent investigation; and, at the request of Mr. H. Darwin, I arranged an experimental investigation of three whistles, which was carried out for me by Mr. F. M. Turner of Trinity College. What was required was some method of determining the pitch of the note of the whistle which should be independent of the calculation I have discussed. For this purpose it appeared that an experimental method suggested by Lord Ray-

leigh ("Phil. Mag." [5], vii, p. 153) would be particularly suitable. The method depends upon the behaviour of a "sensitive flame," when a high note is sounded. The coal-gas flame issuing from a pin-hole burner becomes "sensitive" if the gas is supplied at a sufficiently high pressure (say 10 inches of water, the ordinary gas supply pressure being about 1 inch), so that a flame about 18 inches long is obtained just on the point of flaring. A high note, such as those caused by rattling a bunch of keys, or a hiss, makes the flame flare, and it continues to flare as long as the note sounds, recovering its steadiness when the sound ceases.

If a continuous high note is made by blowing a whistle or "bird-call" by means of a weighted gas bag, and at some distance from the whistle a plane vertical surface is erected, so that the waves of sound are reflected normally, the interference of the reflected waves with the subsequent incident waves produces a series of nodes with intervening loops in the space between the whistle and the wall. Lord Rayleigh has shewn that if the sensitive flame is moved into various positions in this space, the whistle will flare everywhere except at the nodes, and there the flame will be, comparatively speaking, undisturbed. The position of the nodes can therefore be identified by means of the sensitive flame, and, as the distance between consecutive nodes is half a wave-length, the wave-length of the note in free air is easily deduced from observation of the internodal distance; if λ be the wave-length so obtained, N the vibration frequency of the note, and v the velocity of sound, which may be quite safely assumed as known, $N = \frac{v}{\lambda}$, and no correction is required.

A number of observations were taken by Mr. Turner on this plan with three whistles, denoted *A*, *B*, and *C* respectively, the gas for the sensitive flame was supplied from a gas-holder that could be loaded at pleasure, and a gas-bag furnished air to the whistles. A plate of glass served as a reflecting wall. The pressures of the air and gas were measured by means of ∪ tubes containing water.

This method proved to be applicable to notes with a pipe-length between 3 mm. and 7·6 mm. The practical reasons against its use for other notes are as follows:—A particular flame is not sensitive for all high notes within the range of a whistle at the same time, but the gas pressure can always be adjusted and a flame obtained which flares when a given note is blown on the whistle, within the range of 9 mm. pipe length to half mm. or less, far beyond the limit of audibility.[1] My own ears cannot appreciate a note with a pipe-length less than 3·7 mm. Mr.

[1] Under favourable conditions the behaviour of the sensitive flame when the whistle is blown as in actual practice, by squeezing the india-rubber bladder, is very striking. As the length of the pipe is gradually shortened, the flame gives a short flare for each puff of air until the piston is pushed quite home, when no flare occurs. It would, however, not be safe to make any inference as to the pitch of the note for lengths less than half a millimetre.

Turner's limit is 3·8, so that the flame responds to continuous sounds at least three octaves above the highest sounds commonly audible. But it is not an easy matter to get the reflexion nodes well marked as points of minimum flaring; the pressure of the gas requires careful adjustment in any case, and we were unable with any adjustment to get nodes for pipe lengths greater than 7·6 mm. or less than 3 mm. This range embraces notes from 8,000 to 21,000 complete vibrations per second. I cannot safely assign any reason for our inability to get nodes for higher pitches; it may be due to the comparatively large area of the section of the flame at its sensitive part, or to the continuous effect of disturbing vibrations which, being inaudible, cannot otherwise be perceived; but even as the case stands we have measured the nodal distances of notes a major third higher than anything that either of us could hear, and it is possible that with other flames a higher limit may be reached. For wave-lengths longer than 34 mm. the flame had to be made so sensitive that it was unstable and no satisfactory observations could be made.

In each determination of an internodal distance the positions of a large number of points of minimum flaring at different distances from the reflecting wall were read many times over and a mean result deduced.

The following specimen will exemplify the agreement between the observations, and show how the mean value is deduced.

WHISTLE *A*.

Length of whistle 7·1 mm.

Pressure of air blowing the whistle = 26·4 cm. of water.

No. of the node.	Observations of distance of nodes from the wall in mm.					Mean distance.	Calculated half wave-length.
1	18·2	18·4	18·2			18·3	18·3
2	33·1	34·0	32·7	34·8		33·6	16·8
3	48·0	50·0	51·7	49·0		49·7	16·6
4	68·5	66·0	68·0	64·5	65·1	66·4	16·6
5	83·2	81·0	82·2	83·8		82·5	16·5
6	101·0	99·3				100·2	16·7
7	116·3	119·4	118·0			117·9	16·6

In this and some other cases the length calculated from the first node is far greater than that from any of the others. This may be due to the heating effect of the flame, which cannot well be allowed for. We thought better therefore to leave out the first position in all cases. The mean result of this series then will be—

Half wave-length=16·63 mm.

All the mean results obtained are given in the following table:—

TABLE OF RESULTS.

Whistle used.	Pressure of air in cm. of water.	Length of whistle in mm.	Quarter wave-length in free air in mm.
A	16·7	3·0	3·96
„	16·9	3·3	4·15
„	27 5	5·0	6·65
„	26·0	„	6·53
„	19·3	„	7·40
B	32·8	„	6·30
„	21·4	„	7·05
C	29·1	„	6·32
„	22·8	„	6·50
A	26·4	7·1	8·32
B	24·5	„	8·22
„	15·9	„	8·77
A	27·0	7·6	8·55

It appears from these results (1) that the different whistles give practically the same note at the same pressure; (2) That the note sounded varies considerably with the pressure, the values at 5 mm. differing by about a "whole tone" for a variation of pressure between 19·3 and 32·8 cm. of water; (3) That the true wave-length is greater than four times the length of the pipe. It is difficult to suggest a general law which will meet the case, in consequence of the variation of the note with the pressure. The pressure of the air in actual practice with the whistle is obtained by squeezing the little india-rubber bladder attached to the whistle. The pressure is variable, but the ear recognises only one note. This may be connected with a fact that we observed in connection with them, namely, that the whistles required a certain definite pressure, different for each, in order to produce a clear note, if the pressure was not correct the sound produced might be called a hiss, yet it gave good nodes. It appears that, speaking very roughly, the correction to be applied to the observed length of pipe in order to obtain the the true quarter wave-length for the higher pressures does not differ much from 1 mm., and is therefore nearly equal to 1·5 × diameter of pipe, the correction found by Wertheim to be applicable in the case of organ pipes of corresponding shape.

NOTE *on the* DIEYERIE TRIBE *of* SOUTH AUSTRALIA.

By Mr. SAMUEL GASON. (Communicated by J. G. FRAZER, M.A.)

Mr. Frazer writes as follows:—

I enclose a copy of a letter received by me from Mr. Samuel Gason in reply to some enquiries which I had addressed to him concerning the Dieyerie tribe of aborigines, South Australia. Mr. Gason, in the course of his duties as police trooper, has been for many years familiar with the tribe in question, whose manners and

customs he has described in a very valuable little work, included in the volume, "Native Tribes of South Australia." The following letter supplements on some important points the information contained in that work. In particular it shows that the Dieyerie belongs to that rare class of cases, intermediate between mother kin and father kin, where the sons take their totem from the father and the daughters from the mother.

This is not, as I hope to point out elsewhere, to be confounded with the sex totem, of which examples are to be found in Australia, but (so far as I know) nowhere else. In view of Mr. Gason's letter the statement of Mr. Howitt ("Journ. Anthrop. Inst.," XIII, p. 457) that descent in the Dieyerie tribe is uterine, needs correction.

The following is Mr. Gason's letter, dated from Beltana, South Australia, March 6th, 1887:—

I beg to acknowledge the receipt of your letter, and to send the following remarks in reply to your inquiries, *re* branches of the aborigine Dieyerie tribe of South Australia.

1st. As to whether children of the father inherit the father's branch or class name, I reply yes, the sons take the father's class, the daughters the mother's class, *e.g.*, if a *dog* (being the *man*) marries a *rat* (being the *woman*) the sons of the issue would be dogs, the daughters of the issue would be rats.

2ndly. As to whether the father is the head of the family, I say most certainly.

3rdly. As to whether the father eats of his children at the burial ceremony, my reply is that the father does not eat of his offspring; the reason assigned is that, being the head of the family, he has sufficient command, and being a man (not weak like a woman) he can resist the deep grief occasioned by the loss of his child, and not be perpetually crying, causing a nuisance to the camp and tribe; whereas, a mother and other female relatives are compelled to eat of their offspring and dear departed relatives, for by so doing, they are supposed to have a presence of their departed in their liver (they feel from their liver, not from their heart as we do). The man will eat of his brother, his uncle, his cousin, or dear friend, but not of his father, nor his grandfather, nor his offspring.

4thly. The members of each class-name do not pay any particular respect to their branch, further than each class thinks that they are of the oldest families. They eat the animals or plants of which they derive their class names.

5thly. On all deaths, either from natural causes or otherwise, an inquiry or inquest is held immediately before burial, and in case of the departed being a person of note or influence, the result of the inquiry is a verdict of murder against some person or persons of the same tribe or of the neighbouring tribe, even if the deceased died from natural causes, they having a superstitious belief that any man who is a *Koonkie* (doctor) has the power to cause any person's death by sickness at any distance by the use of a human bone, carried out by a superstitious charm.

Fourth Annual Report of the Bureau of Ethnology—Smithsonian Institution, Washington, 1886.

The Fourth Annual Report of the Bureau of Ethnology is not quite as large as its predecessors, neither is it, perhaps, quite as full of interest, although the papers are of high scientific value, from the systematic manner in which the work of exploration has been carried out, and the large amount of material collected and classified.

The recorded field-work consists of explorations among the mounds of the Mississippi Valley, in the course of which four thousand one hundred specimens were added to the National Museum, including a large collection of pottery, skulls, stone, copper, and shell implements and ornaments, also some articles shewing contact with Europeans, such as hammered iron, bracelets, brooches, and crosses of silver, and a hog's tooth. The full report of these explorations will be of great utility to future workers in this extensive field; but the explorations carried on by Mr. James Stevenson, among the cliff dwellings in the cañons of North Mexico, are of still greater interest, for these cliff dwellings are an extraordinary development of the primitive cave dwellings of early man, consisting of huge chambers tunnelled into the solid rock, in some cases 300 feet above the bed of the cañon. Some of these village chambers are of enormous dimensions, one being described as 1,500 feet from side to side, and about half that space from the back to the edge of the cliff; calculated to have been the home of between a thousand and fifteen hundred persons. The floor of this cave, probably a natural cavity enlarged, was studded with dwellings built of square stones laid in mortar, and houses three stories high are found, filling up spaces between rocky projections, whilst frequently houses have been built jutting out from the cliff, reminding one of swallows' nests on a large scale.

The most singular part of these extraordinary dwellings is, that they appear to have been constructed entirely by users of stone implements; but who, judging from their works, must have attained to a civilisation superior to that of the neolithic peoples of Europe, for they had much artistic skill, the dwellings being painted in various colours, generally in bands, but also in a pattern resembling the Greek fret, and with many curious designs of unknown meaning introduced. They seem, also, to have cultivated Indian corn, and to have made garments and matting from the fibre of the Yucca; they also wore finely woven sandals of peculiar pattern, and skeletons have been found, buried in a sitting posture, with the flesh and skin dried to the hardness of stone.

Mr. Frank Cushing continues his interesting researches among the Zuñis, and Mr. Victor Mindeleff is prosecuting the same work among the Moki, and we may hope soon to see the result of their investigations.

Good work has also been done in classifying the languages of

many of the Indian tribes, by the Rev. Owen Dorsey, Mrs. Erminie Smith, and others, and it is probable that through the names of animals, trees, &c., we may, in time, obtain a knowledge of the migrations and affinities of the various tribes.

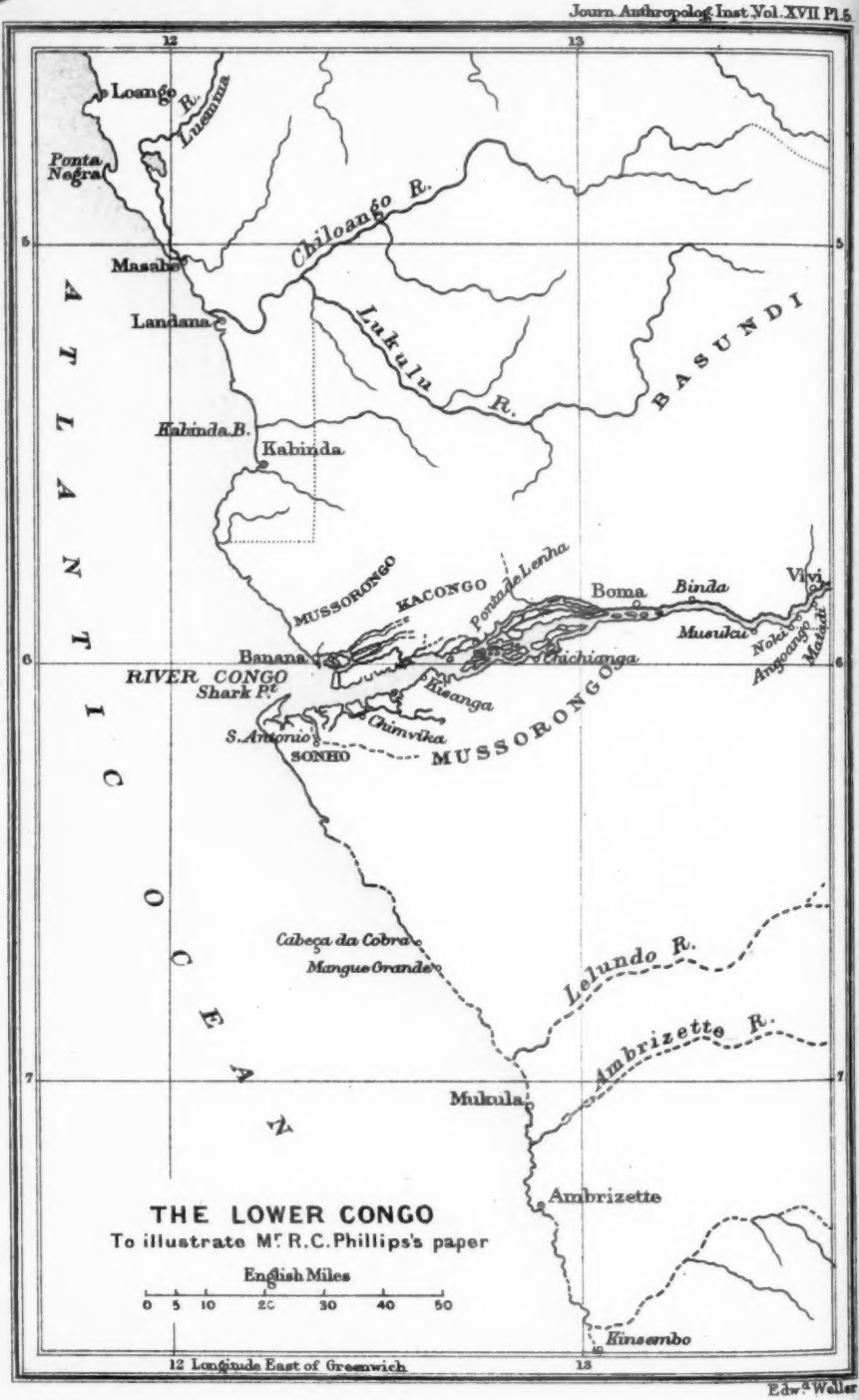
The most important paper in the present volume is that by Colonel Garrick Mallery, U.S.A., on the Pictographs of the North American Indians, which is very profusely illustrated, and includes rock sculptures as well as paintings. It is of especial interest to find that a certain geographical area can be assigned to each form of descriptive writing, or hieroglyphs, as they may be called. Colonel Mallery supposes that American pictographs are: "1st. Mnemonic, embracing order of songs, traditions, treaties, war, and time. 2nd. Notifications, comprising notice of departure and direction, of condition, warning and guidance, geographic features, claim or demand, messages and communications, and record of expeditions. 3rd. Totemic: this embraces tribal, gentile, clan, and personal designations, insignia and tokens of authority, personal names, property marks, status of individuals, and signs of particular achievements. 4th. Religious, comprising mythic personages, shamanism, dances and ceremonies, mortuary practices, grave posts, charms and fetiches. 5th. Customs and habits. 6th. Tribal history. 7th. Biographic, in which are examples giving continuous record of events in a life, and other cases of particular exploits and occurrences." From this it will be seen that the pictographs of a tribe are, in fact, the history of that tribe, or rather of particular events relating to the chiefs of the tribe, although in some cases they have a symbolic, or religious meaning.

The next paper is on the "Pottery of the Ancient Pueblos," by William H. Holmes, followed by another on the "Origin and Development of Form and Ornament in Ceramic Art," by the same author. In these we are introduced to many quaint and curious forms in pottery, and to some very beautiful ornamental designs, showing that the ancient Americans had attained to greater perfection in this art than even the early Greeks and Etruscans, although the designs are chiefly geometrical.

The concluding paper in this volume is one by Mr. Frank Cushing on "A Study of Pueblo Pottery, as illustrative of Zuñi Culture Growth," which treats of the evolution of form both in architecture and pottery, through necessity or convenience. With regard to architecture, Mr. Cushing supposes the rectangular form to have been developed from the circular, which was the older, originating from the tent; whilst he believes pottery to have been anticipated by basketry.

These papers should be studied carefully by those who are interested in the ancient pottery of Europe, for they would find in them many suggestions for future investigations.

A. W. Buckland.


12
13
Loango
R. Luemma
Ponta Negra
Chiloango R.
5
Masabe
Landana
Lukulu R.
BASUNDI
ATLANTIC OCEAN
Kabinda B.
Kabinda
MUSSORONGO
KACONGO
Ponta de Lenha
Boma
Binda
Vivi
Musuku
Nokki
Angoango
Matadi
6
Banana
RIVER CONGO
Shark Pt
Chichianga
Kisanga
Chimvika
S. Antonio
SONHO
MUSSORONGO
Cabeça da Cobra
Mangue Grande
Lelundo R.
Ambrizette R.
7
Mukula
Ambrizette
Kinsembo
THE LOWER CONGO
To illustrate Mr R.C. Phillips's paper
English Miles
0 5 10 20 30 40 50
12 Longitude East of Greenwich
13

Edw.d Weller